
اللهم أنر قبر منْ حنّ لهُ القلب
اللهم هب له سعة في قبره لا يرا لها نهاية
هب لمضجعه طيبا وَ لظلمته نورا
ولذنوبه غفراناً وَ برّد قبره
وزده احساناً فوق احسانه
واجعل الجنة مسكنه

A 25-year-old woman presents to A&E with a 1-month history of joint pains and sore, red eyes. She has no significant past medical history and is taking no medication. Examination reveals normal cardiovascular, respiratory and abdominal systems. Joint examination reveals tenderness in her knees, but mainly her ankle joints with a reduced range of movement and swelling. Examination of the lower limbs reveals a raised, red, tender rash on both shins. Her chest radiograph is shown below.



Investigations:

Na^+	140 mmol/l
K^+	4.5 mmol/l
Urea	5.0 mmol/l
Creatinine	60 mol/l
Bilirubin	12 mol/l
APL	100 U/l
ALT	35 U/l
Corr.Ca^{++}	2.70 mmol/l (2.2-2.6)
WCC	10 x 10^9/l
HB	13 g/dl
PLT	170 x 10^9/l

What is the most likely diagnosis?

A	Inflammatory bowel disease
B	Sarcoidosis
C	Primary hyperparathyroidism
D	Secondary hyperparathyroidism
E	Tertiary hyperparathyroidism

2319

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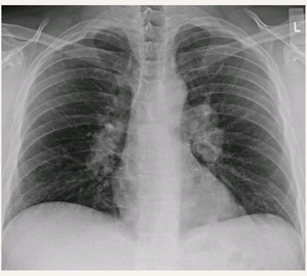
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Calculator

Normal Values

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Explanation

B Sarcoidosis

Sarcoidosis is correct because this lady has ankle synovitis (which is quite classical for sarcoidosis), erythema nodosum, uveitis and hypercalcaemia, and bihilar lymphadenopathy on chest X-ray. NB: Löfgren syndrome is an acute form of sarcoidosis with erythema nodosum, bihilar lymphadenopathy and polyarthralgia or polyarthritis. Serum angiotensin-converting enzyme (ACE) may be elevated, but this is non-specific for sarcoidosis. Across the range of patients with sarcoidosis, hypercalcaemia is seen in up to 20%.

A Inflammatory bowel disease

Although inflammatory bowel disease may be associated with a seronegative enteropathic arthritis and erythema nodosum, it is rare in the absence of any bowel symptoms. The serum calcium is also out of keeping with a diagnosis of inflammatory bowel disease.

C Primary hyperparathyroidism

This lady's clinical features (arthritis, erythema nodosum) are not explained by primary hyperparathyroidism. The only feature that fits is hypercalcaemia.

D Secondary hyperparathyroidism

Secondary hyperparathyroidism is associated with a normal or low serum calcium level and abnormal renal function, which isn't seen here.

E Tertiary hyperparathyroidism

Tertiary hyperparathyroidism is associated with long-standing renal failure, but this patient has normal renal function.

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A 63-year-old man presents with a 4-week history of painful wrists. He has smoked 60 cigarettes a day for many years. He complains of mild swelling of his hands without stiffness, predominantly affecting the phalanges and the distal end of the radius and ulna. Examination shows tenderness just proximal to the joints without limitation of movement. A picture of his fingers is shown below.



What would be the most likely radiological appearance?

A	Periosteitis over the ulnar and radius
B	Irregular bone lysis
C	Chondrocalcinosis
D	Pannus formation
E	Narrowing of the joint space

2326

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Calculator

Normal Values

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Explanation

A	Periosteitis over the ulnar and radius

This gentleman likely has hypertrophic pulmonary osteoathropathy (HPOA), probably caused by non-small cell lung cancer – he is a smoker and has clubbing. HPOA usually affects the wrists and/or ankles and is a paraneoplastic phenomenon characterised by periosteal reaction.

B	Irregular bone lysis

Lytic lesions have a wide differential, including metastases and infection. They are very rarely found on hand (or foot) X-rays, and this is unlikely in this scenario.

C	Chondrocalcinosis

Chondrocalcinosis is seen in pseudo-gout. Pseudo-gout, resulting from the formation of calcium pyrophosphate crystals and deposition into the synovial fluid, most commonly affects the knee, although other joints can also be affected including the wrists, shoulders and elbows. The patient may present with warm, swollen joint or joints and acute onset. This would not be consistent with the history or examination findings in this scenario.

D	Pannus formation

Pannus is seen during fracture healing.

E	Narrowing of the joint space

In HPOA the joint space is usually unaffected. Joint space narrowing can be seen in conditions such as rheumatoid arthritis or osteoarthritis.

The presence of clubbing and tender wrists without synovitis makes pulmonary osteoarthropathy the most likely diagnosis. It is usually associated with underlying carcinoma of the lung. Regression of the pain has been reported with successful resection of the tumour and after vagotomy.

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Responses Total:	2
Responses - % Correct:	0%

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A 50-year-old man presents with an acutely red, tender, left knee joint. He has a long history of hypertension, which has been well controlled over a number of years with bendroflumethiazide and amlodipine. There is no history of recent injury, The pain has been severe for 2 days and on examination the joint is red, warm and tender. There is swelling and a small effusion. The knee joint is aspirated and sent to the lab for analysis.

Investigations:

Na^+	145 mmol/l
K^+	3.2 mmol/l
Urea	6.0 mmol/l
Creatinine	100 mol/l
CRP	70 mm/h
ESR	10 × 10^9/l
WCC	14.0 × 10^9/l
Hb	14.0 g/dl
PLT	180 x 10^9/l
Knee joint aspirate	WBCs 2000/ l

What is the most likely diagnosis?

A	Meniscus tear
B	Rheumatoid arthritis
C	Gout
D	Septic arthritis
E	Osteoarthritis

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Calculator

Normal Values

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What is the most likely diagnosis?

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D	Septic arthritis
E	Osteoarthritis

Explanation

C Gout

This patient has risk factors for gout (middle-aged male, on a diuretic), and therefore gout is the most likely explanation in this scenario. The low potassium level is consistent with the use of bendroflumethiazide, a drug that predisposes the patient to gout (but not pseudo-gout), and the inflammatory markers support this. (Bendroflumethiazide is not the first-line treatment of hypertension, but NICE guidelines recommend that patients who are already taking bendroflumethiazide with well-controlled hypertension continue this treatment.)

Gout and pseudo-gout cannot be reliably distinguished on purely clinical grounds. The synovial fluid would be expected to show the presence of crystals. In gout, needle-shaped intracellular and extracellular crystals of monosodium urate appear. When examined with a polarising filter, these are yellow when aligned parallel to the axis of the red compensator, but they turn blue when aligned across the direction of polarisation (i.e. they exhibit negative birefringence). In pseudo-gout, calcium pyrophosphate (CPP) crystals appear, these being shorter and often rhomboidal. Under a polarising filter, CPP crystals do not change colour according to their alignment relative to the direction of the red compensator. In pseudo-gout, radiography may show chondrocalcinosis which is useful in differentiating between the two conditions. However, of the five options provided, gout is the most likely diagnosis in this scenario.

A Meniscus tear

A meniscal tear would cause a swollen, painful knee joint but the patient would provide a history of recent injury to the knee, with progressive increase in swelling over a few days. With more severe injury the patient may experience locking of the knee. This patient has no history of knee injury, and a warm, red joint is not consistent with a meniscal tear.

B Rheumatoid arthritis

RA is very unlikely to present as mono-arthritis of the knee, and is usually a small joint polyarthritis affecting the hands.

D Septic arthritis

Whenever a patient has a mono-arthritis, the clinician should always consider joint sepsis as it is very important not to miss this diagnosis. However, in this case, the relatively low number of pus cells is against a diagnosis of septic arthritis; most septic joints have a white count >50,000/ l, with >75% polymorphonuclear leukocytes.

E Osteoarthritis

OA is not correct, because of the acute history and very high inflammatory markers. OA is insidious in onset and is associated with normal inflammatory markers.

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Responses Total:	3
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A 21-year-old man has recently returned from a holiday in the Far East. He gives a history of symmetrical joint pain in his knees, ankles and feet and also complains of sore eyes. On further questioning the patient informs you that he did have unprotected sexual relations on several occasions whilst away, and is now experiencing some pain on urination. His ESR is raised. A synovial fluid aspirate is sterile but with a high neutrophil count.

What is the most likely diagnosis?

A	Ankylosing spondylitis
B	Septic arthritis
C	Reactive arthropathy
D	Rheumatoid arthritis
E	Still's disease

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Calculator

Normal Values

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What is the most likely diagnosis?

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D	Rheumatoid arthritis
E	Still's disease

Explanation

C	Reactive arthropathy

The history of recent travel to the Far East with episodes of unprotected sexual encounters raises the possibility of venereal disease. An oligoarthritis is seen more often than symmetrical arthropathy in reactive arthritis. The history of urethritis/dysuria and conjunctivitis t completes the reactive arthritis triad. A penile swab should be taken and treatment should include treatment of the probable underlying STI.

A	Ankylosing spondylitis

The potential exposure to venereal pathogens makes reactive arthropathy a more likely diagnosis than ankylosing spondylitis. Furthermore, there is no history of back or buttock pain.

B	Septic arthritis

Septic arthritis is usually a mono-arthritis, but can be a polyarthritis in approximately 10% of cases. His synovial fluid aspirate is sterile, and the concurrent symptom of sore eyes suggests conjunctivitis associated with a reactive arthritis.

D	Rheumatoid arthritis

The presence of conjunctivitis and evidence of urethritis steers us more towards reactive arthritis versus rheumatoid.

E	Still's disease

Still's presents with high spiking fevers and oligoarthritis over the course of a few weeks/months, and not usually in this age group.

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Responses Correct:	0
Responses Incorrect:	4
Responses Total:	4
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A 50-year-old Asian woman who has been living in the UK for 5 years presents complaining of bone pain, especially in the lower back and both legs. She also describes difficulty walking upstairs, and standing from a sitting position. The patient is a lifelong vegetarian, but does eat small amounts of dairy products. On examination, there is mild proximal muscle weakness.

Investigations:

Phosphate	0.7 mmol/l
Ca^{++}	2.1 mmol/l
ALP	180 U/l
Urea	3.2 mmol/l
Creatinine	75 mmol/l
K^+	4.2 mmol/l
Na^+	140 mmol/l

What radiographic finding would be the most specific for the diagnosis?

A	Normal bones
B	Low-density bands extending from the cortex
C	Osteopenia
D	Subperisoteal erosions
E	Sclerotic bone

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Calculator

Normal Values

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E	Sclerotic bone

Explanation

B	Low-density bands extending from the cortex

This woman's ethnic origin and her history are suggestive of osteomalacia. In fact, vitamin D deficiency is very common in the UK, even in Caucasians, due to the climatic conditions. The diagnosis is confirmed by the blood results. Looser's zones occur in this condition and are characterised by low-density bands extending from the cortex inwards in the shafts of long bones. Osteomalacia is associated with vitamin D deficiency which leads to hypocalcaemia, phosphate at the lower end of the normal range and elevated alkaline phosphatase. Bone pain and proximal myopathy are well-recognised sequelae.

A	Normal bones

This is a possibility, even in osteomalacia, but given her symptoms, clinical findings of myopathy and abnormal biochemistry, pseudo-fractures or Looser's zones are more likely to be present than a normal appearance on X-ray.

C	Osteopenia

Osteopenia and osteoporosis are usually associated with normal bone profiles/biochemistry. Risk factors for osteopenia include past history of smoking, early menopause, below normal body weight and type 2 diabetes.

D	Subperisoteal erosions

Subperiosteal erosions can be seen in hyperparathyroidism, which would usually be associated with hypercalcaemia and low serum phosphate.

E	Sclerotic bone

Sclerotic and lytic bones may be seen in Paget's, in which one would see an isolated elevated ALP and normal serum calcium.

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Responses Correct:	0
Responses Incorrect:	5
Responses Total:	5
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A 40-year-old man is attending the Rheumatology Clinic because of pain and stiffness in his hands.

Examination shows this appearance:



What is the most likely diagnosis?

A	Psoriatic arthropathy
B	Rheumatoid arthritis
C	Systemic sclerosis
D	Systemic lupus erythematosus (SLE)
E	Pseudohypoarthropathy

6346

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Calculator

Normal Values

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Examination shows this appearance:



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Explanation

The nails show pitting and onycholysis (lifting of the nail from the nail bed). There are swellings of the joints involving the distal interphalangeal joint (in contrast to rheumatoid arthritis in which the distal phalangeal joints are not involved); however, sometimes the joint involvement may resemble that of rheumatoid arthritis. Arthritis mutilans (telescoping of phalanges) rarely occurs. The function of the hands is usually good unless the joints are severely inflamed. In about 75% of patients there is a preceding history of psoriasis before the arthropathy; in 15%, the onset of the rash is synchronous and in 10% the arthritis precedes the rash.

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Session Progress

Responses Correct:	0
Responses Incorrect:	6
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A 43-year-old man attends for review. His past medical history includes renal stones treated by lithotripsy, and he also has type II diabetes. He is taking treatment for high cholesterol. He has been attending the clinic for a number of months with long-standing pain and swelling in his fingers.

This is the clinical appearance of his hands:



Picture courtesy of Charlie Goldberg, M.D., UCSD School of Medicine and VA Medical Center, San Diego, California

What is the most likely diagnosis?

A	Calcinosis
B	Gout
C	Pseudogout
D	Psoriatic arthropathy
E	Rheumatoid arthritis

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Calculator

Normal Values

© Pastest 2017

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What is the most likely diagnosis?

A	Calcinosis
B	Gout
C	Pseudogout
D	Psoriatic arthropathy
E	Rheumatoid arthritis

Explanation

This is chronic gout with tophi (uric acid crystals in the soft tissues), indicating long-standing hyperuricaemia. Untreated chronic tophaceous gout can develop and lead to severe joint destruction. Men are affected twice as commonly as women and it tends to be a disease of middle to older age; as a general rule, uric acid levels are elevated for 20 years before the onset of gout. Hyperuricaemia is associated with an increase in all-cause mortality. Patients with gout are often clustered with the insulin resistance syndrome known as syndrome X: diabetes, hypertension, hypertriglyceridemia, and low high-density lipoproteins, though no evidence indicates that gout or hyperuricaemia cause any of these other disorders. The relationship between serum uric acid and cardiovascular disease remains controversial, but raised uric acid may be an independent risk factor for vascular disease in some individuals with other risk factors.

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Session Progress

Responses Correct:	0
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A local GP asks you to review a 42-year-old woman who has suffered from symptoms of oesophageal reflux disease that have only partially responded to proton-pump inhibitors. She has recently started to complain in particular about cold weather, and may have Raynaud's phenomenon. Routine blood testing has revealed a raised creatinine of 180 mol/l, and she is hypertensive with a blood pressure of 170/85 mmHg.

Which one of the following agents is the best treatment to ameliorate further renal impairment?

A	Ramipril
B	Amlodipine
C	Bendrofluazide
D	Prednisolone
E	IV methylprednisolone

6411

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Calculator

Normal Values

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Explanation

A Ramipril

ACE inhibitors are seen as the treatment of choice for renal disease associated with systemic sclerosis (the diagnosis here). This lady should be seen in Casualty, as she may have scleroderma renal crisis. In systemic sclerosis, interlobular renal arteries are affected with intimal thickening, and fibrinoid changes occur in afferent glomerular arterioles. The pathogenesis is unknown, and neither steroids nor immunosuppressive therapy appears to have an effect on the progression of renal disease. In contrast, treatment with ACE inhibitors has positive effects on proteinuria and appears to halt or even reverse decline in renal function in some cases. Prostacyclin infusion may be of additional benefit in cases where renal function is rapidly deteriorating.

B Amlodipine

Amlodipine is a calcium channel blocker. ACE inhibitors are seen as the treatment of choice for renal disease associated with systemic sclerosis. Calcium channel blockers may be used in the treatment of Raynaud's, where they reduce the frequency and severity of vasospastic attacks. Calcium channel blockers can also be useful in patients who have systemic sclerosis with lung involvement.

C Bendrofluazide

Bendrofluazide is a thiazide diuretic, and thiazides are moderately potent diuretics. Because of their negative effects on glucose tolerance, they are no longer the recommended first-line treatment for hypertension, but are useful in the treatment of mild to moderate heart failure. Thiazides are ineffective if eGFR is <30 ml/min/1.73 m^2, and have no reno-protective benefits.

D Prednisolone

Steroids may provoke/trigger renal crisis and should be used sparingly or in caution with patients who have scleroderma. High-dose steroids can be useful in patients with pulmonary fibrosis, pleural inflammation, pericarditis or other systemic manifestations of systemic sclerosis, commenced at high dose which is gradually reduced and then withdrawn. However, steroid treatment is not a valid option to ameliorate further renal impairment.

E IV methylprednisolone

Methylprednisolone may be used in certain cases of highly active inflammatory disease while long-term treatment is commenced. However, steroids may provoke/trigger renal crisis and should be used sparingly in patients with scleroderma; this is therefore not the best treatment option to ameliorate further renal impairment.

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A woman who was given a diagnosis of systemic sclerosis 4 years ago presents for review. She has been suffering significantly increased shortness of breath over the past few months. Respiratory function testing reveals evidence of pulmonary fibrosis, and echocardiography suggests elevated right heart pressures. You arrange for iloprost infusion treatment.

Which one of the following pharmacological interventions is most likely to provide additional benefit in reducing pulmonary artery pressure?

A	Ramipril
B	Amlodipine
C	Atenolol
D	Sildenafil
E	Prednisolone

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Calculator

Normal Values

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D	Sildenafil
E	Prednisolone

Explanation

D Sildenafil

Sildenafil has positive effects in reducing pulmonary arterial pressure. Ghofrani published evidence (in *Annals of Internal Medicine*) in 2002 from a study in 30 patients with pulmonary hypertension; six of these patients had evidence of systemic sclerosis. Severe pulmonary hypertension was defined as pulmonary artery pressure >40 mmHg. Patients were randomised to receive between 12.5 and 50 mg of sildenafil in addition to iloprost infusion. The study showed a dose-dependent benefit of sildenafil on pulmonary artery pressure. Unfortunately, pulmonary hypertension is still a significant contributor to mortality in systemic sclerosis.

A Ramipril

Although blood pressure control may reduce pulmonary artery pressure to a small degree, sildenafil is the best fit here. ACE inhibitors are the treatment of choice for renal disease associated with systemic sclerosis, in which the ACE inhibitor may halt or even reverse the decline in renal function in certain cases.

B Amlodipine

Although blood pressure control may reduce pulmonary artery pressure by a small degree, sildenafil is the best fit here, and calcium channel blockers are not usually indicated for patients with pulmonary hypertension associated with systemic sclerosis. A small proportion of patients may benefit from a reduction in pulmonary blood pressure associated with their use, and this is indicated by acute vasoreactivity testing. Calcium channel blockers are useful in the non-urgent management of Raynaud's phenomenon that does not respond adequately to general measures, and therefore many patients with systemic sclerosis may be prescribed amlodipine for this reason.

C Atenolol

Although blood pressure control may reduce pulmonary artery pressure by a small degree, sildenafil is the best fit here. Beta blockers are best avoided in patients with systemic sclerosis, as non-cardioselective beta blockers (and cardioselective beta blockers to a certain extent) may cause peripheral vasoconstriction and worsen the symptoms of Raynaud's.

E Prednisolone

Steroids do not improve pulmonary artery pressure and are a risk factor for scleroderma renal crisis, and should therefore be used sparingly in patients with scleroderma. High-dose steroids may, however, be useful in patients with pleurisy, pericarditis or other severe systemic manifestations of systemic sclerosis.

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Responses Incorrect:	9
Responses Total:	9
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A 45-year-old woman presents to her GP complaining of skin dryness with dry and gritty eyes. She also has diminished libido because of increasing vaginal dryness. You arrange for a Schirmer test to be carried out.

Which of the following test results would be useful in the diagnosis of Sjögren syndrome?

A	4 mm of filter strip wetting on Schirmer tear test
B	Positive ANCA
C	Negative rheumatoid factor
D	Positive anti-smooth muscle antibodies
E	Reduced oestrogen levels

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Calculator

Normal Values

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E	Reduced oestrogen levels

Explanation

A	4 mm of filter strip wetting on Schirmer tear test

The Schirmer tear test involves placement of a standard strip of filter paper on the inside of the lower eyelid. Wetting of <5 mm in 5 min indicates defective tear production. In Sjögren syndrome, Rose Bengal staining of the eyes may show punctuate or filamentary keratitis. Laboratory abnormalities include a polyclonal raised IgG and positive rheumatoid factor. Antinuclear antibodies are found in 60–70% and antimitochondrial antibodies in 10%. Anti-Ro and -La antibodies are found in 70% of patients with primary Sjögren syndrome. Treatment is with artificial tears and saliva-replacement solution.

B	Positive ANCA

A positive ANCA (anti-neutrophil cytoplasmic antibody) is associated with certain types of systemic vasculitis, especially Wegener's granulomatosis and microscopic polyarteritis. It has no clinical relevance in the diagnosis of Sjögren.

C	Negative rheumatoid factor

Rheumatoid factor is non-specific and may be positive in numerous rheumatological conditions, including Sjögren where up to 70% of patients have a positive result. A negative result would not be helpful in the diagnosis of the condition.

D	Positive anti-smooth muscle antibodies

Positive anti-smooth muscle antibodies is associated with systemic lupus erythematosus.

E	Reduced oestrogen levels

Oestrogen levels may be measured to exclude a hormonal cause for vaginal dryness, but will not be useful in the diagnosis of Sjögren. The treatment of vaginal dryness in the setting of Sjogren syndrome includes the use of vaginal moisturisers and water-soluble lubricants during sexual activity. Oestrogen creams may also be of benefit.

6413

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Difficulty: Easy

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Session Progress

Responses Correct:	0
Responses Incorrect:	10
Responses Total:	10
Responses - % Correct:	0%

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A 76-year-old man is brought to the Emergency Department complaining of severe headaches affecting the left-hand side of his head. He has also suffered intermittent pain in his jaw on chewing. On further questioning, his wife reports that her husband has suffered increasing tiredness over the past few weeks. Laboratory testing reveals a markedly raised ESR of 90 mm/h.

What is the optimal next step in managing this condition?

A	Urgent CT scan of the head
B	Book temporal artery biopsy for surgical list in 5 days' time
C	Start 20 mg prednisolone per day
D	Start 40 mg prednisolone per day
E	Arrange immunoglobulin testing

6414

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Calculator

Normal Values

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A	Urgent CT scan of the head
B	Book temporal artery biopsy for surgical list in 5 days' time
C	Start 20 mg prednisolone per day
D	Start 40 mg prednisolone per day
E	Arrange immunoglobulin testing

Explanation

The history and markedly raised ESR are suggestive of a diagnosis of temporal arteritis. A temporal artery biopsy from the affected side is the definitive diagnostic test, though treatment with prednisolone should not be delayed while awaiting biopsy. Histological features on biopsy include intimal hypertrophy, inflammation of the intima and sub-intima, breaking up of the internal elastic lamina, and giant cell infiltration of the internal elastic lamina. Prednisolone therapy should not be delayed because involvement of the ophthalmic arteries can cause sudden unilateral visual loss. Treatment is with high-dose prednisolone therapy, and the symptom response is both dramatic and diagnostic. In total, around three-quarters of patients need between 1 and 3 years of steroid therapy, though the remaining quarter may require continued steroids for some years.

6414

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Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	11
Responses Total:	11
Responses - % Correct:	0%

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A 60-year-old woman is referred to the rheumatology clinic after suffering her second Colles' fracture. Dual-energy X-ray absorptiometry (DEXA) scanning reveals a T-score of -2.8, confirming osteoporosis. The patient is keen to start preventive therapy.

Investigations:

Phosphate	0.9 mmol/l
Ca^{++}	2,27 mmol/l
ALP	180 U/l
Urea	3.2 mmol/l
Creatinine	75 mmol/l
K^{+}	4.2 mmol/l
Na^{+}	140 mmol/l

What is the best choice for initial therapy in this patient?

A	Hormone-replacement therapy>
B	Calcium supplementation
C	Calcium and vitamin D supplementation
D	Raloxifene
E	Bisphosphonate therapy

6415

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Calculator

Normal Values

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B	Calcium supplementation
C	Calcium and vitamin D supplementation
D	Raloxifene
E	Bisphosphonate therapy

Explanation

E	Bisphosphonate therapy

Osteoporosis is defined by a T-score of –2.5 SD or below on DXA scanning

NICE guidelines TA160/161 state that alendronate is recommended as a treatment option for the secondary prevention of osteoporotic fragility fractures in postmenopausal women (such as the patient in this scenario) who are confirmed to have osteoporosis. In women aged 75 years or older, a DXA scan may not be required if the responsible clinician considers it to be clinically inappropriate or unfeasible.

Alendronate is also recommended as a treatment option for the primary prevention of osteoporotic fragility fractures in the following groups (see links below for full guidance):

1. Women aged 70 years or older who have an independent clinical risk factor for fracture or an indicator of low BMD and who are confirmed to have osteoporosis. In women aged 75 years or older who have two or more independent clinical risk factors for fracture or indicators of low BMD, a DXA scan may not be required.
2. Women aged 65–69 years who have an independent clinical risk factor for fracture and who are confirmed to have osteoporosis.
3. Postmenopausal women younger than 65 years who have an independent clinical risk factor for fracture and at least one additional indicator of low BMD, and who are confirmed to have osteoporosis.
   Risedronate and etidronate are recommended as alternative treatment options for the primary and secondary prevention of osteoporotic fragility fractures in postmenopausal women who are unable to comply with the special instructions for the administration of alendronate, or have a contraindication to or are intolerant of alendronate.

Oral bisphosphonates are relatively contraindicated with dyspepsia, but IV bisphosphonates are associated with a higher increased risk of avascular necrosis of the jaw and atypical femoral fractures. Another rare complication of long-term bisphosphonate therapy is the risk of long bone mid-shaft fractures, possibly due to prolonged suppression of bone turnover. The International Osteoporosis Foundation and the European Society on Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) conclude that the risk of these rare (<1 in 1000) atypical fractures is outweighed by the benefit of prevention of other osteoporotic fractures.

A	Hormone-replacement therapy>

HRT has been proven to reduce loss of bone mineral density and fracture risk at vertebral and other sites in postmenopausal women. In recent years, however, the risks of thrombosis, cardiovascular disease and cancers have thrown into question the risk-benefit ratio of HRT.

B	Calcium supplementation

Calcitonin is rarely used, and intranasal calcitonin has been withdrawn due to malignancy.

C	Calcium and vitamin D supplementation

Calcium and vitamin D are insufficient alone, but may be used alongside bisphosphonates. NICE osteoporosis guidelines state that unless clinicians are confident that women who receive treatment for osteoporosis have an adequate calcium intake and are vitamin D replete, calcium and/or vitamin D supplementation should be considered.

D	Raloxifene

Raloxifene is a selective oestrogen receptor modifier that appears to be associated with a reduction in the risk of oestrogen receptor-positive breast carcinomas, as well as positive effects on bone mineral density. Raloxifene is not recommended by NICE as a treatment option for the primary prevention of osteoporotic fragility fractures in postmenopausal women, but recommends that it should be considered for the secondary prevention of osteoporotic fragility fractures in postmenopausal women who:

- are unable to comply with the special instructions for the administration of alendronate and either risedronate or etidronate, or have a contraindication to or are intolerant of alendronate and either risedronate or etidronate; and
- who also have a combination of T-score, age and number of independent clinical risk factors for fracture (see guidelines below).

6415

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Difficulty: Easy

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Session Progress

Responses Correct:	0
Responses Incorrect:	12
Responses Total:	12
Responses - % Correct:	0%

External Links

Alendronate, etidronate, risedronate, raloxifene and strontium ranelate for th...
nice.org.uk/guidance/TA160

Aldendronate, etidronate, risedronate, raloxifene and strontium ranelate and ...
nice.org.uk/guidance/TA161

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You review a 52-year-old man who complains of persistent bone pain. Bone scanning indicates activity particularly affecting the femurs you discuss treatment options including bisphosphonate therapy. He has no other medical conditions and no family history of bone conditions or malignancy. The patient has been studying the condition on the Internet and is worried about possible risk of osteogenic sarcoma.

Which of the factors below is associated with increased risk of osteogenic sarcoma?

A	Bisphosphonate therapy
B	Retinoblastoma
C	Previous chemotherapy treatment
D	Osteopenia
E	Age >50 years

6416

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Calculator

Normal Values

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A	Bisphosphonate therapy
B	Retinoblastoma
C	Previous chemotherapy treatment
D	Osteopenia
E	Age >50 years

Explanation

B	Retinoblastoma

This is a rare malignancy of the eye found in children. In hereditary forms of retinoblastoma there is an increased risk of developing bone or soft tissue sarcomas. This risk is further increased if radiotherapy has been used to treat the patient.

Other conditions that increase the risk of osteosarcoma include Paget's disease of the bone, hereditary multiple ostochondromas and inherited cancer syndromes such as Li–Fraumeni syndrome.

A	Bisphosphonate therapy

There is no link between bispohosphonates and osteogenic sarcoma. The mainstay of treatment for Paget's disease is bisphosphonate therapy, which is proven to relieve symptoms of pain and has been shown to reduce the risk of pathological fracture in long bones and complications of Paget's such as deafness. Bisphosphonates may also be of benefit alongside conventional chemotherapy treatment of osteosarcoma.

C	Previous chemotherapy treatment

Chemotherapy has not been linked with osteosarcoma, but there is an increased risk of developing osteosarcoma in individuals who have had radiotherapy. In this situation the osteosarcoma arises in the area of previous treatment.

D	Osteopenia

There is no causative link between osteopenia and osteosarcoma. Bone diseases associated with increased risk of osteosarcoma include Paget's disease of the bone and hereditary multiple ostochondromas.

E	Age >50 years

Osteosarcoma is most commonly found in children and young adults. Symptoms of osteogenic sarcoma include increased pain localised to one particular area, and pathological fracture. Although the risk of osteogenic sarcoma is 30 times that of patients without Paget's, the risk of sarcoma development is still small (<1% of patients with Paget's disease develop osteosarcoma). The incidence in adults with Paget's tends to peak in the seventh decade, usually in patients with long-standing disease with multiple sites of involvement.

6416

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Session Progress

Responses Correct:	0
Responses Incorrect:	13
Responses Total:	13
Responses - % Correct:	0%

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You review a 24-year-old man who has recently returned from a holiday in Spain. He complains of fever and malaise with associated myalgia and joint pain affecting his lower back, knees, ankles, and feet. He has burning and itching affecting his eyes and urethral discharge. On examination, he has balanitis and a psoriatic-type rash affecting his feet. You prescribe a course of antibiotics and non-steroidal anti-inflammatory drugs.

Which of the following is associated with an increased risk of the arthropathy described in this scenario?

A	Female sex
B	Age >50 years
C	Coeliac disease
D	*Candida* infection
E	HLA-B27-positive status

6418

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Calculator

Normal Values

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You review a 24-year-old man who has recently returned from a holiday in Spain. He complains of fever and malaise with associated myalgia and joint pain affecting his lower back, knees, ankles, and feet. He has burning and itching affecting his eyes and urethral discharge. On examination, he has balanitis and a psoriatic-type rash affecting his feet. You prescribe a course of antibiotics and non-steroidal anti-inflammatory drugs.

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A	Female sex
B	Age >50 years
C	Coeliac disease
D	*Candida* infection
E	HLA-B27-positive status

Explanation

E	HLA-B27-positive status

This man has the typical picture of reactive arthritis, most likely related to non-specific urethritis acquired while on holiday in Spain.

Reactive arthritis should always be considered whenever a young adult presents with acute arthritis affecting the knees, ankles or feet. Reactive arthritis is a systemic inflammatory disorder characterised by an aseptic arthritis triggered by infections arising most commonly from the genitourinary and gastrointestinal site.

Peak onset of reactive arthritis occurs in the 15–35-year-old age group. Reactive arthritis post-chlamydial infection is much more common in men, while the sex ratio of reactive arthritis post-dysentery is roughly equal between men and women. HLA-B27 patients have been described as up to 50 times more likely to develop reactive arthritis than the rest of the population (Aho K. *et al.,* HLA-B27 in reactive arthritis).

In general, symptoms last from a few weeks to around 6 months in total. However, recurrent arthritis is said to occur in 15–50% of reactive arthritis patients, and chronic persistent arthritis or sacro-iliitis occurs in 15–30%. In HLA-B27-positive patients, ankylosing spondylitis may develop in up to 50% of patients who have suffered an episode of reactive arthritis. Rarer long-term complications include urethral stricture, cataracts and aortic root necrosis. Prognosis with respect to long-term complications is better when dysenteric infection is the precipitant factor rather than chlamydial infection.

A	Female sex

Recurrent arthritis is more usually found in men, where it is approximately three times more common.

B	Age >50 years

The peak onset of reactive arthritis occurs in the 15–35-year-old age group.

C	Coeliac disease

Enteric-acquired reactive arthritis can occur up to 4 weeks after an acute episode of diarrhoea. However, there is no clear association with coeliac disease.

D	*Candida* infection

Candida infection is not linked with reactive arthritis, *Chlamydia trachomatis* is often indicated in sexually acquired cases of reactive arthritis.

6418

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Responses Incorrect:	14
Responses Total:	14
Responses - % Correct:	0%

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A 38-year-old Caucasian woman presents for review with a history of two transient ischaemic attacks in the past 24 months. In addition, she reports cramping of her arms when lifting weights at the gym. She has also been significantly tired recently. She has smoked 20–30 cigarettes per day since the age of 34 years. Arteriography reveals diffuse stenoses of the thoracic and abdominal aortae, as well as the subclavian arteries.

Investigations:

Hb	12.7 g/dl
WCC	4.8×10^9/l
PLT	450×10^9/l
Neutrophils	2.5×10^9/l
Lymphocytes	1.8×10^9/l
ESR	58 mm/1st h
CRP	21 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	15 IU/l
ANA	-

What diagnosis fits best with this clinical picture?

A	Buerger's disease
B	Behçet's disease
C	Takayasu's disease
D	Giant-cell arteritis
E	Systemic lupus erythematosis

6419

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Calculator

Normal Values

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ANA	-

What diagnosis fits best with this clinical picture?

A Buerger's disease

B Behçet's disease

C Takayasu's disease

D Giant-cell arteritis

E Systemic lupus erythematosis

Explanation

C Takayasu's disease

Takayasu's disease (TD) is a continuous or patchy granulomatous inflammatory vasculitis that causes progressive occlusive disease of the aorta and its branches. It is rare in the Western world, with an annual incidence of between 2 and 3 per million. It more commonly affects individuals in Asia and the Far East, although may occur in Caucasian patients, such as in this case. Approximately 80% of patients are women, and the mean age of onset is 30 years. Presentation may be with constitutional symptoms such as fever, malaise and weight loss; neurological symptoms such as transient ischaemic attacks; or vascular symptoms such as claudication, including upper limb claudication. Cardiac features include angina, heart failure and aortic regurgitation. Renal manifestations may include mesangial proliferative glomerulonephritis. Blood tests may be normal, but usually there is a modest inflammatory response as in this case – raised ESR and CRP. Corticosteroids with the addition of steroid-sparing second agents such as methotrexate or azathioprine are the mainstay of therapy. With good care, 15-year survival rates approach 90%.

A Buerger's disease

Buerger's disease (thromboangiitis obliterans) is a condition associated with progressive inflammation and thrombosis (clotting) of small and medium arteries and veins of the hands and feet, predominantly in young male smokers. Although this lady is a heavy smoker, her symptoms of transient ischaemic attacks started only two years into her smoking history, and their timing would thus not be appropriate for a diagnosis of Buerger's.

B Behçet's disease

Behcet's disease is a rare, multi-system vasculitis, usually associated a triad of oral ulcers, genital ulcers and uveitis. Vascular complications are usually found in men.

D Giant-cell arteritis

Giant cell arteritis (temporal arteritis, GCA) is usually found in elderly Caucasian females (mean age of onset 70, not found in patients under 50) and is associated with headache and a risk of irreversible blindness. GCA may occur as part of a spectrum of polymyalgia rheumatic, characterised by proximal muscle pain.

E Systemic lupus erythematosis

Although this lady is in the right demographic for SLE – a young female – she has no signs of symptoms of SLE, such as rash, photosensitivity, arthralgia, etc. and has a negative ANA.

6419

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Session Progress

Responses Correct:	0
Responses Incorrect:	15
Responses Total:	15
Responses - % Correct:	0%

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A 62-year-old man attends for review. He has evidence of arthritis affecting the shoulder, elbow, radiocarpal, and knee joints bilaterally, with pain also in the left first metatarso-phalangeal joint. X-ray of the left knee reveals calcification within the hyaline cartilage. Aspiration of the left knee reveals calcium pyrophosphate crystals. Serum uric acid is slightly above the upper limit of normal. Other medical history of note is ulcerative colitis.

What is the most likely diagnosis in this case?

A	Gout
B	Pseudogout
C	Primary osteoarthritis
D	Rheumatoid arthritis
E	Sero-negative arthritis

6420

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Calculator

Normal Values

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A 62-year-old man attends for review. He has evidence of arthritis affecting the shoulder, elbow, radiocarpal, and knee joints bilaterally, with pain also in the left first metatarso-phalangeal joint. X-ray of the left knee reveals calcification within the hyaline cartilage. Aspiration of the left knee reveals calcium pyrophosphate crystals. Serum uric acid is slightly above the upper limit of normal. Other medical history of note is ulcerative colitis.

What is the most likely diagnosis in this case?

A	Gout
B	Pseudogout
C	Primary osteoarthritis
D	Rheumatoid arthritis
E	Sero-negative arthritis

Explanation

The clinical picture of joint involvement, coupled with evidence of chondrocalcinosis and pyrophosphate crystals is strongly suggestive of a diagnosis of pseudogout. The slightly elevated uric acid and history of ulcerative colitis are ‘red-herrings’ in this case. Management involves use of simple painkillers and non-steroidal anti-inflammatory agents coupled with physiotherapy where appropriate. Associated conditions include haemochromatosis and Wilson’s disease, where there are other symptoms and signs it may be worth screening for these concomitant illnesses. Pseudogout has an equal male:female ratio, with frequency increasing with increasing age; it is said to affect around 5% of subjects above the age of 30 years.

6420

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Difficulty: Easy

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Responses Total:	16
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A 42-year-old woman presents with intensely painful fingers on going outdoors during the autumn and winter months. She reports the same problem if she washes her hands in cold water. Her fingers go pale and blue-tinged, and later become erythematous and are burning and prickly. Examination in the clinic is unremarkable.

Investigations:

Hb	13.7 g/dl
WCC	4.8 × 10^9/l
PLT	188 × 10^9/l
Neutrophils	2.1 × 10^9/l
Lymphocytes	1.8 × 10^9/l
ESR	18 mm/1st h
CRP	21 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	15 IU/l
Glucose	5.5 mmol/l
TSH	2.0 mU/l
CK	70 u/l
ANA	-

What is the best initial medical treatment for this lady?

A	Nifedipine MR
B	Atenolol
C	Ramipril
D	Prednisolone
E	Aspirin

6421

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Calculator

Normal Values

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Glucose	5.5 mmol/l
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ANA	-

What is the best initial medical treatment for this lady?

A Nifedipine MR

B Atenolol

C Ramipril

D Prednisolone

E Aspirin

Explanation

A Nifedipine MR

Extensive screening has failed to establish an underlying cause for this lady's Raynaud's, so she has primary Raynaud's phenomenon or Raynaud's disease. Primary Raynaud's is not usually associated with increased mortality or morbidity, although occasionally necrosis of the affected extremity may occur. Clearly, in patients presenting with this symptom picture, it is crucial to carry out an extensive screen for underlying autoimmune or metabolic disease as in this case, as therapy should be tailored to any underlying condition. Primary Raynaud's commonly presents in the second or third decade of life, and prevalence is slightly higher in women than men – put at around 5% depending on case series. Treatment of choice is with vasodilating calcium-channel antagonists such as nifedipine modified/sustained release (MR/SR) or angiotensin II receptor blockers such as losartan.

B Atenolol

Beta blockers such as atenolol may precipitate a worsening of Raynaud's symptoms, as they may cause vasoconstriction.

C Ramipril

There is no evidence that ACE inhibitors improve symptoms of Raynaud's, and there is no indication in primary Raynaud's. There is some evidence to support the use of selective serotonin reuptake inhibitors (SSRIs) or angiotensin II-receptor blockers (ARBs), such as losartan. However, it is unclear why the mechanisms of why ARBs are advantageous over ACE inhibitors.

D Prednisolone

Steroids do not improve symptoms of Raynaud's, and there is no indication in primary Raynaud's. Steroids may occasionally be used in secondary Raynaud's where there is an underlying inflammatory process driving the condition, e.g. in SLE.

E Aspirin

There is no evidence that aspirin improves the symptoms of Raynaud's. Multiple antithrombotic agents, including aspirin, dipyridamole, anticoagulants and thrombolytic therapy, have been used in patients with Raynaud's phenomenon in whom ulceration and thrombosis have occurred. The benefit of antiplatelet therapy is not well studied, but such therapy is often used in cases of secondary Raynaud's phenomenon when there is a risk of thrombosis. Long-term anticoagulation in the absence of a hypercoagulable state is not recommended.

6421

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Responses Correct:	0
Responses Incorrect:	17
Responses Total:	17
Responses - % Correct:	0%

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You review a 42-year-old lady who is referred to the rheumatology clinic because blood tests have shown a positive CCP antibody at >200. Her rheumatoid factor is negative. She denies any joint pains or stiffness and examination is normal, with no evidence of synovitis. The blood test was performed as part of a health check. Her great-grandmother had rheumatoid arthritis with significant deformities at a time that unfortunately biological therapy was not available.

Investigations:

Hb	13.7 g/dl
WCC	4.8×10^9/l
PLT	188×10^9/l
Neutrophils	2.1×10^9/l
Lymphocytes	1.8×10^9/l
ESR	10 mm/1st h
CRP	2 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	15 IU/l
Glucose	5.5 mmol/l
Anti-CCP	2>200
RF	-
ANA	-

What is the best management plan?

A	Start methotrexate
B	Advise her to stop smoking
C	Start hydroxychloroquine
D	Nothing: reassure and discharge her from clinic
E	Work her up for anti-TNF

6422

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Calculator

Normal Values

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RF	-
ANA	-

What is the best management plan?

A Start methotrexate

B Advise her to stop smoking

C Start hydroxychloroquine

D Nothing: reassure and discharge her from clinic

E Work her up for anti-TNF

Explanation

B Advise her to stop smoking

There is evidence that stopping smoking and delaying the onset of the development of arthritis in patients at risk of developing RA (such as this lady, with positive anti-CCP antibodies) can ameliorate the prognosis of patients in whom arthritic symptoms have already developed (e.g. reduce the burden of joint damage).

A Start methotrexate

This lady has anti-CCP antibodies and a family history of rheumatoid arthritis. She does have a higher risk of developing rheumatoid arthritis, although she does not have any synovitis currently and therefore the benefits of starting methotrexate do not outweigh the risk.

C Start hydroxychloroquine

Although hydroxychloroquine is the best-tolerated and least toxic DMARD, there is no evidence that patients at risk of developing RA (asymptomatic, anti-CCP positive) have any better prognosis when treated before symptoms develop.

D Nothing: reassure and discharge her from clinic

This lady is asymptomatic and could be discharged from the clinic. However, she should be informed about the effects of smoking on her joints, advised to stop smoking and to seek medical advice if she develops any symptoms of joint pains, stiffness, swelling etc.

E Work her up for anti-TNF

This lady does not fulfil criteria for a diagnosis of RA, and is certainly not eligible for biologic therapy. There is no evidence that starting therapy before the onset of symptoms changes the prognosis or course of disease.

6422

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Session Progress

Responses Correct:	0
Responses Incorrect:	18
Responses Total:	18
Responses - % Correct:	0%

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A 24-year-old man presents to his GP complaining of lower back pain, particularly over the lateral lower spine on bending forward. The pain is worse in the morning; he was signed off from his job as a builder 6 months earlier due to an episode of plantar fasciitis.

Investigations:

Hb	12.6 g/dl
WCC	4.8×10^9/l
PLT	198×10^9/l
Neutrophils	2.9×10^9/l
Lymphocytes	2.8×10^9/l
ESR	15 mm/1st h
CRP	7.0 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	25 IU/l
Anti-CCP	>200
RF	-
ANA	-

What is the best initial therapy in this case?

A	Rest for a further 1 month
B	Non-steroidal anti-inflammatory agents
C	Non-steroidal anti-inflammatory agents and physiotherapy
D	Sulphasalazine
E	Etanercept

6423

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A 24-year-old man presents to his GP complaining of lower back pain, particularly over the lateral lower spine on bending forward. The pain is worse in the morning; he was signed off from his job as a builder 6 months earlier due to an episode of plantar fasciitis.

Investigations:

Hb	12.6 g/dl
WCC	4.8 × 10^9/l
PLT	198 × 10^9/l
Neutrophils	2.9 × 10^9/l
Lymphocytes	2.8 × 10^9/l
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E	Etanercept

Explanation

C Non-steroidal anti-inflammatory agents and physiotherapy

This man's presentation is highly suspicious of spondyloarthritis/ankylosing spondylitis, i.e. back pain onset <40 years, morning stiffness and associated plantar fasciitis. Adequate pain relief and physiotherapy have a crucial role to play in maintenance of function when the disease is diagnosed early.

A Rest for a further 1 month

Minimising activity, i.e. rest, is the worst thing this gentleman could do. Mobilising and exercise have a critical role in the management of spondyloarthritis/ankylosing spondylitis.

B Non-steroidal anti-inflammatory agents

NSAIDs, in combination with physiotherapy have been shown to have the best outcomes in ankylosing spondylitis.

D Sulphasalazine

DMARDs, such as sulfasalazine, are used when patients have peripheral joint arthritis (e.g. a swollen knee), which this man does not.

E Etanercept

TNF-a antagonists such as etanercept are recommended by NICE if disease is still active despite two NSAIDs for at least four weeks.

6423

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A 54-year-old man presents to his GP complaining that he is unable to get up off his low sofa. There is also a history of pain and tenderness particularly over the thigh muscles and the shoulder girdle. On further questioning, he admits to shortness of breath on exercise and chronic cough. Examination reveals an obese man with obvious proximal muscle weakness and evidence of interstitial lung disease. CK level is 1050 U/l (24–195), ESR is raised and anti-Jo-1 antibodies are positive.

What diagnosis fits best with this clinical picture?

A	Polymyalgia rheumatica
B	Dermatomyositis
C	Polymyositis
D	Giant cell arteritis
E	Hypothyroidism

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A 54-year-old man presents to his GP complaining that he is unable to get up off his low sofa. There is also a history of pain and tenderness particularly over the thigh muscles and the shoulder girdle. On further questioning, he admits to shortness of breath on exercise and chronic cough. Examination reveals an obese man with obvious proximal muscle weakness and evidence of interstitial lung disease. CK level is 1050 U/l (24–195), ESR is raised and anti-Jo-1 antibodies are positive.

What diagnosis fits best with this clinical picture?

A	Polymyalgia rheumatica
B	Dermatomyositis
C	Polymyositis
D	Giant cell arteritis
E	Hypothyroidism

Explanation

Patients with polymyositis commonly present after 3–6 months of symptoms with painful proximal muscle weakness. CK levels may be elevated to 5–50 times the upper limit of normal. Anti-Jo-1 antibodies are associated with coexistent interstitial lung disease, Raynaud's phenomenon and peripheral arthritis. Prednisolone is the mainstay of treatment, at an initial dose of 1 mg/kg/d. In patients who fail to show improvement, disease-modifying steroid-sparing agents may be added. A high-protein diet and supervised exercise may further improve symptoms. Most patients have a favourable response to corticosteroid therapy, and 5-year survival rates approach 80%. Women are more frequently affected than men, with a female:male ratio of 3:1. Dermatomyositis is associated with a characteristic heliotrope rash, (not seen here), polymyalgia and giant cell arteritis are not associated with a rise in CK. Hypothyroidism is usually associated with a more modest rise in CK and not with anti-Jo antibodies.

6424

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A 47-year-old personal assistant attends the outpatient clinic with a six-month history of malaise and joint pains. She has had to quit her job. She is also complaining of difficulty sleeping at night and urinary frequency. She complains of still being tired on waking up. On examination, palpation of her muscles appears to cause pain in several different regions, especially around the shoulders and neck.

Investigations:

Hb	12.6 g/dl
WCC	4.0×10^9/l
PLT	198×10^9/l
Neutrophils	2.9×10^9/l
Lymphocytes	2.8×10^9/l
ESR	11 mm/1st h
CRP	2.0 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	25 IU/l
Anti-CCP	-
RF	-
ANA	-

What is the most likely diagnosis?

A	Fibromyalgia
B	Depression
C	Rheumatoid arthritis
D	Polymyalgia rheumatic
E	Systemic lupus erythematosus

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What is the most likely diagnosis?

A	Fibromyalgia
B	Depression
C	Rheumatoid arthritis
D	Polymyalgia rheumatic
E	Systemic lupus erythematosus

Explanation

A Fibromyalgia

Fibromyalgia is said to occur in between 1 and 2% of the general population and has a female to male ratio of 9:1, presenting most often in the 30–50-year age group. It presents with musculoskeletal pain that often has multiple trigger points and may be poorly defined. The 1990 ACR classification criteria for FM include (1) the presence of widespread pain for more than 3 months and (2) pain, not just tenderness, that can be elicited by manual pressure of approximately 4 kg/cm^2 at 11 or more defined tender points. The number of painful tender points is correlated strongly with psychologic distress, not only in patients with FM but also in the general population. (These criteria are classification criteria for the selection of subjects for research studies, not diagnostic criteria.) At a clinical level, fibromyalgia is much more than widespread pain. Substantial overlap exists in major depressive disorder, various anxiety disorders and chronic fatigue syndrome, and in multiple regional pain syndromes, such as headache, atypical chest pain (chest pain with normal cardiac evaluation findings), irritable bowel syndrome, chronic pelvic pain, temporomandibular joint pain (jaw pain with no underlying pathologic condition) and others.

The EULAR 2016 management guidelines suggested that initial management should involve patient education and focus on non-pharmacological therapies. In case of non-response, further therapies should be tailored to the specific needs of the individual and may involve psychological therapies (for mood disorders and unhelpful coping strategies), pharmacotherapy (for severe pain or sleep disturbance, such as tricyclic antidepressents) and/or a multi-modal rehabilitation programme, such as graded exercise programmes.

B Depression

However, this lady may have depression as well as fibromyalgia; there is association and overlap.

C Rheumatoid arthritis

The normal autoimmune screen and inflammatory markers make RA unlikely.

D Polymyalgia rheumatic

This patient has a normal ESR. Patients with polymyalgia rheumatic usually have elevated inflammatory markers – ESR and CRP. Additionally she is slightly too young for PMR, which is very rare in patients under 50 years of age.

E Systemic lupus erythematosus

The normal autoimmune screen and ESR make SLE very unlikely – 95% of patients with SLE have a positive ANA. This lady has a negative ANA, effectively excluding SLE.

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A 66-year-old retired labourer presents to his GP complaining of an acutely swollen and red ankle. The attack started the night before with swelling and pain, and despite taking various analgesics, the pain intensified. He is a known hypertensive and suffers from congestive cardiac failure and osteoarthritis. He had previous similar episodes a few years ago. His current medications include bendroflumethiazide, lisinopril and amlodipine. On examination, the patient is apyrexial. There is a small, hard lump on his ear and he has a red, swollen and exquisitely painful right ankle, but he has full range of movement.

Based on this patient's history and clinical examination, what is the most likely diagnosis?

A	Septic arthritis
B	Reactive arthritis
C	Gout
D	Pseudo-gout
E	Fracture of the ankle

6799

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A	Septic arthritis
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D	Pseudo-gout
E	Fracture of the ankle

Explanation

C Gout

He has had previous episodes or attacks before and has risk factors for gout, e.g. diuretic use, and has a tophus on clinical examination. Given that he has tophaceous gout, he should be started on allopurinol, when the acute attack has settled. Losartan could be started, in place of one of the other antihypertensives, the former having uricosuric action. Gout and pseudo-gout are conditions caused by the accumulation of crystals in the joint space resulting in pain, redness and swelling in the affected joints. Both conditions are more prevalent in males, gout more markedly so, and usually affect patients in the age range 30–60 years. Gout is caused by the accumulation of monosodium urate monohydrate crystals, whilst pseudo-gout is caused by the accumulation of calcium pyrophosphate crystals. In gout, the first metatarsophalangeal joint of the big toe is the site most commonly affected (the condition is known as 'podagra'), with other common sites being the ankle, wrist and knee. The condition results from overproduction or reduced secretion of uric acid, with thiazide diuretics and foods that are rich in purines increasing the frequency of attacks.

A Septic arthritis

Septic arthritis should, however, always be considered in a mono-arthritis. Patients with crystal-induced arthritis may also present with fever and malaise, but he has no risk factors for septic arthritis such as recent penetrating injury or gonorrhoea, and the previous similar episodes suggest gout.

B Reactive arthritis

There is no infective precipitant – gastrointestinal or genitourinary. Reactive arthritis is usually an oligoarthritis (2–4 joints affected).

D Pseudo-gout

Although it is difficult to reliably distinguish gout and pseudo-gout on clinical grounds, a tendency exists for gout symptoms to develop rapidly over a few hours, whereas the onset of symptoms in pseudo-gout tends to be more insidious and may occur over a period of several days. The joints affected by pseudo-gout usually include the knee, wrist and shoulder.

E Fracture of the ankle

A fracture without a history of trauma or injury and in the absence of osteoporosis is very unlikely.

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A 39-year-old man presents to his GP complaining of long-standing lower back pain. He has tried multiple treatments for it, including physiotherapy and osteopathy, but they have had no effect. The pain tends to be distributed asymmetrically along the lower back and he gets mild relief by using NSAIDs. He is otherwise fit and well and is not on any other medications. He has had two episodes of redness and pain in his right eye, which he thought was an 'infection' and which resolved with appropriate treatment. He has one brother who is also known to suffer from back pain that has prevented him from working, but the patient is not aware of the exact nature of the problem since his brother is now living in Australia. The positive findings found at clinical examination include transverse ridging and pitting of most of his fingernails and pain on palpation of his lower back.

On the basis of these findings, what is likely to be the diagnosis?

A	Reactive arthritis
B	Ankylosing spondylitis
C	Osteoarthritis
D	Psoriatic arthritis
E	Gout

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A	Reactive arthritis
B	Ankylosing spondylitis
C	Osteoarthritis
D	Psoriatic arthritis
E	Gout

Explanation

D	Psoriatic arthritis

This man has psoriatic arthritis of the axial spondylitis sub-type. Psoriatic arthritis is a member of the group of seronegative spondyloarthritides. It affects men and women equally, with the range of age of onset being between 35 and 55 years. The condition can present with or without the associated psoriatic skin lesions or only with nail malformations. If no obvious skin lesions are visible, the clinician must look for psoriasis in hidden sites such as the scalp, intergluteal cleft and umbilicus. Nail involvement includes onycholysis, transverse ridging and nail pitting. Five subsets of psoriatic arthritis have been described based on the pattern of joint involvement, with an increased prevalence of the spondylitic form in males and the rheumatoid form in females. Extra-articular features of the condition include flexor tendon synovitis and uveitis.

A	Reactive arthritis

The history is too long for reactive arthritis (which is usually acute, not chronic) and there is no gastrointestinal or genitourinary infective precipitant before the onset.

B	Ankylosing spondylitis

This man has axial spondylitis as part of psoriatic arthritis. The condition can be distinguished from the sacroiliitis seen in ankylosing spondylitis by the presence of the other clinical signs of cutaneous psoriasis in the nails and the skin.

C	Osteoarthritis

This man is too young to have primary degenerative changes, and if he does have degenerative changes on X-ray, these are likely to be secondary osteoarthritis due to previous inflammation.

E	Gout

Gout very rarely affects the spine or proximal joints such as the hips or shoulders.

6800

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A 74-year-old woman presents to her GP complaining of poorly localised but severe pain in her shoulder. The pain started suddenly about 10 days ago and has become increasingly severe, being present at rest and at night and exacerbated by any activity. She has tried taking analgesics to relieve the pain but the pain returns. She denies any other joint pains and has no history of trauma. She does, however, require oral steroids for occasional exacerbations, which she estimates at approximately two to three times a year. On examination, it is noted that she has a decreased range of movement and that attempts to move the joint cause obvious pain to the patient. Crepitations are also noted. An X-ray is requested and is reported as showing minimal changes, including slight flattening of the humeral head.

What is the diagnosis?

A	Subluxation of the glenohumeral joint
B	Fracture of the neck of the humerus
C	Avascular necrosis of the head of the humerus
D	Rotator cuff tendonitis
E	Osteoarthritis of the shoulder joint

6801

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C	Avascular necrosis of the head of the humerus
D	Rotator cuff tendonitis
E	Osteoarthritis of the shoulder joint

Explanation

C	Avascular necrosis of the head of the humerus

Avascular necrosis is characterised by sudden-onset, severe pain. Her risk factor is long-term oral steroids. X-ray changes are usually minimal and an MRI is the diagnostic investigation of choice. Avascular necrosis is a pathological process that results from interruption of the blood supply to bone. Ultimately, the main presentation is with pain and limitation of movement, although the pain is poorly localised. Both night and rest pain are present and worsened with activity. Two forms of the condition exist – a traumatic form and an atraumatic form. The traumatic form occurs in nearly all fractures of the anatomic neck as well as in fractures or dislocations of the humeral head. There are multiple risk factors associated with the atraumatic form, including steroid use, alcohol use, haemoglobinopathies (such as sickle cell and thrombophilias) and connective tissue disorders. The mainstay of treatment is the removal of the causative agent, if possible, with non-surgical options often being more successful in cases of avascular necrosis of the shoulder because the shoulder is a non-weight-bearing joint.

A	Subluxation of the glenohumeral joint

Shoulder subluxation is usually provoked by trauma or injury; other causes can include previous injury to the joint, and joint laxity. The subluxation may be evident on radiographs, particularly if an AP and lateral view are requested. MRI may be needed to confirm diagnosis. The history of no trauma does not fit with the diagnosis, and neither do the findings on the X-ray.

B	Fracture of the neck of the humerus

Fractures usually occur after trauma or injury, but may be atraumatic if the bone is very osteoporotic. Fractures should be evident on radiographs. In this scenario we would expect the patient to complain of localised tenderness if a fracture was present.

D	Rotator cuff tendonitis

Rotator cuff tendonitis usually presents with a more gradual history and pain is particularly elicited on abduction.

E	Osteoarthritis of the shoulder joint

Acromioclavicular joint osteoarthritis would be visible on shoulder X-ray, and the history is more insidious than in this patient.

6801

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A 38-year-old male postgraduate student from Hong Kong presents to his GP complaining of sudden-onset left ear pain, and with an inability to sleep on the affected side. He reports that he is feeling very low because he has had a number of health problems since coming to this country 6 months ago. On further questioning he admits to having general aches and pains, including pains in various joints over this time. He reports that both his eyes are red all the time but that anti-allergy drops bought from the chemist have had no effect. He has also had a couple of nose bleeds, which is a first for him and which he blames on the increased pollution in the air, which he also feels is responsible for the hoarseness in his voice. He denies any known medical problems and, apart from analgesics, he is not on any regular medication. Positive findings on clinical examination include left auricular chondritis, bilateral eyelid oedema and bilateral mild episcleritis, tenderness to palpation over the anterior trachea and pain on palpation over the costochondral joints. The GP orders some blood tests and X-rays, including rheumatoid factor, which is negative.

What is the most likely diagnosis?

A	Relapsing polychondritis
B	Reiter's syndrome
C	Wegener's granulomatosis/granulomatosis with polyangitis (GPA)
D	Cogan's syndrome
E	Polyarteritis nodosa

6802

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A 38-year-old male postgraduate student from Hong Kong presents to his GP complaining of sudden-onset left ear pain, and with an inability to sleep on the affected side. He reports that he is feeling very low because he has had a number of health problems since coming to this country 6 months ago. On further questioning he admits to having general aches and pains, including pains in various joints over this time. He reports that both his eyes are red all the time but that anti-allergy drops bought from the chemist have had no effect. He has also had a couple of nose bleeds, which is a first for him and which he blames on the increased pollution in the air, which he also feels is responsible for the hoarseness in his voice. He denies any known medical problems and, apart from analgesics, he is not on any regular medication. Positive findings on clinical examination include left auricular chondritis, bilateral eyelid oedema and bilateral mild episcleritis, tenderness to palpation over the anterior trachea and pain on palpation over the costochondral joints. The GP orders some blood tests and X-rays, including rheumatoid factor, which is negative.

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E	Polyarteritis nodosa

Explanation

A	Relapsing polychondritis

This young man has inflammation of cartilaginous structures – the pinna (red, painful ear), nasal septum (epistaxis) and larynx (hoarse voice), as well as chostochondritis and the C-rings of the trachea, consistent with relapsing polychondritis (RP).

There is no gender difference in the distribution of the disease, and although it can occur at any age it is most common in the fifth decade. The patient's reported symptoms depend on the area of the body affected. General symptoms include intermittent fever and weight loss, but other more specific symptoms include sudden onset of ear pain with an inability to sleep on the affected side, diminished hearing, mono- or polyarthritis, back pain, myalgias, mild epistaxis, saddle-shaped nose, redness of the eyes indicative of conjunctivitis, episcleritis and/or scleritis, hoarseness of the voice and recurrent respiratory infections. There are no specific diagnostic laboratory findings in patients with RP, but the non-specific indicators of inflammation (ESR, CRP) are often elevated. No specific therapy exists for RP, but the goal of treatment is to control the patient's symptoms and to preserve the integrity of the affected cartilaginous structures. The mainstay of treatment is systemic corticosteroids. It is important in these patients to investigate for the presence of other concurrent autoimmune diseases.

B	Reiter's syndrome

Ear pain, epistaxis and hoarse voice are not features of reactive arthritis (Reiter syndrome). Reactive arthritis is a systemic inflammatory disorder characterised by an aseptic oligoarthritis, triggered by infections arising most commonly from the genitourinary and gastrointestinal systems. A history of urethritis/dysuria and conjunctivitis completes the reactive arthritis triad.

C	Wegener's granulomatosis/granulomatosis with polyangitis (GPA)

This condition should, however, be considered in the differential. Ear pain and chostochondritis do not occur with Wegener's granulomatosis. GPA is a rare multi-system autoimmune condition with a wide spectrum of symptoms including lethargy, ongoing rhinitis and sinusitis, arthritis, lung, eye and ENT manifestations. Hallmark histological features are a necrotising granulomatous inflammation and pauci-immune vasculitis in small and medium-sized vessels.

D	Cogan's syndrome

Cogan syndrome is a rare chronic inflammatory autoimmune-mediated disorder characterised by inflammation of the ears and eyes. The pathophysiology is poorly understood, but the immunological theory is based on the release of auto-antibodies against corneal, inner ear and endothelial antigens, and of anti-nuclear cytoplasmic auto-antibodies (ANCA). Preceding infection may also be implicated but again the exact mechanism is unclear. Cogan syndrome can lead to vision difficulty, hearing loss and dizziness. The inner ear is affected, leading to hearing loss in Cogan syndrome, whereas in this case the cartilaginous pinna is affected resulting in a red, swollen, painful ear.

E	Polyarteritis nodosa

This is a rare medium-sized vessel vasculitis, usually leading to mesenteric ischaemia and mononeuritis multiplex. Its presentation is usually of acute onset, with non-specific symptoms including fatigue, myalgia, arthralgia and fever. Multi-system involvement may occur with wide and varied symptoms. However, the symptoms described in this patient are more consistent with relapsing polychondritis.

6802

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A 30-year-old woman complains of pain in the right ankle that she has experienced for the past 3 weeks. Two or three days later, she notices that the ankle is also swollen. A week later, this is followed by pain and swelling in both knees. Her general practitioner (GP) started diclofenac 50 mg three times daily, which alleviated the pain to some extent. She further remembers having loose bowel movements for a few days about 10 days prior to the onset of joint symptoms. She informs you that she sometimes develops loose bowel movements after eating a takeaway. Medications other than non-steroidal anti-inflammatory drugs (NSAIDs) include paracetamol, which she takes for intermittent backache, and salbutamol and beclomethasone inhalers, for bronchial asthma.

Investigations:

Hb	13.7 g/dl
WCC	4.8×10^9/l
PLT	188×10^9/l
Neutrophils	2.1×10^9/l
Lymphocytes	1.8×10^9/l
ESR	18 mm/1st h
CRP	21 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	15 IU/l
Glucose	5.5 mmol/l

What is the most likely diagnosis?

A	Ankylosing spondylitis (AS)
B	Reactive arthritis
C	Septic arthritis
D	Gout
E	Still's disease

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What is the most likely diagnosis?

A	Ankylosing spondylitis (AS)
B	Reactive arthritis
C	Septic arthritis
D	Gout
E	Still's disease

Explanation

B Reactive arthritis

This lady has an oligoarthritis following a likely gastrointestinal infection. Asymmetrical arthritis, predominantly involving large joints in lower extremities, is suggestive of the seronegative spondyloarthropathy type of arthritis. Reactive arthritis is most likely with the preceding history of diarrhoea. Her inflammatory markers are modestly elevated. Reactive arthritis is aseptic inflammatory arthritis, usually triggered by chlamydial urethritis or cervicitis or enteric infection with *Salmonella*, *Shigella*, *Campylobacter* or *Yersinia* in a genetically susceptible individual. HLA B27 is the major currently known genetic risk factor. The arthritis usually resolves in 3 months but can recur or become chronic.

A Ankylosing spondylitis (AS)

There is a clear infective precipitant and although she has back pain, we are not given any features of inflammatory back pain to suggest spondyloarthritis.

C Septic arthritis

She has an oligoarthritis following a diarrhoeal illness. Septic arthritis may be a polyarthritis in 10% of cases, but usually patients are far more sick (with signs of systemic sepsis) with red, hot swollen joints and can barely move these affected joints. Blood results are not overtly helpful for differentiating causes here, but one might expect a higher CRP and white cell count with septic arthritis. NB: Gonococcal septic arthritides are usually associated with a pustular skin rash and red, linear areas of tenosynovitis.

D Gout

This lady has a spreading oligoarthritis following a diarrheal episode. Gout is usually a sudden-onset, exquisitely painful arthritis. This young female patient does not have any risk factors for gout either.

E Still's disease

Still's disease is associated with fevers, a rash and small joint polyarthritis over a more prolonged period than is seen .

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A 30-year-old African woman complains that she is unable to completely straighten her right ankle and has difficulty walking. Her husband was a lorry driver in southern Africa who died of HIV, and she is visiting her sister in England. She is unable to indicate the onset of the ankle problems, and she does not remember injuring the joint. She is experiencing difficulty in walking. Examination reveals a grossly deformed right ankle. There is gross bony swelling around the ankle but no tenderness; crepitus is felt on passive movement of the joint.

Investigations:

Hb	11.7 g/dl
WCC	4.8×10^9/l
PLT	188×10^9/l
Neutrophils	2.1×10^9/l
Lymphocytes	1.8×10^9/l
ESR	17 mm/1st h
CRP	8.0 mg/l
AST	28 IU/l
ALP	101 IU/l
ALT	15 IU/l
Glucose	5.5 mmol/l

he most likely diagnosis is?

A	Septic arthritis
B	Osteoarthritis
C	Rheumatoid arthritis (RA)
D	Charcot's (neuropathic) joint
E	Pyrophosphate arthropathy

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he most likely diagnosis is?

A Septic arthritis

B Osteoarthritis

C Rheumatoid arthritis (RA)

D Charcot's (neuropathic) joint

E Pyrophosphate arthropathy

Explanation

D Charcot's (neuropathic) joint

Individuals lacking sensation in a joint are predisposed to developing severe damage to that joint. Diagnosis is suggested by severe joint destruction with minimal symptoms and surprisingly normal joint movements. First described in 1868 by Charcot in a patient with syphilis, but also seen in syringomyelia, diabetic neuropathy, spinal cord and peripheral nerve injury, leprosy, multiple sclerosis and meningomyelocoele. Tabes dorsalis affects large joints of the lower extremities, whereas syringomyelia affects large joints of the upper extremities and diabetes affects the foot. The suspicion here is of chronic syphilis infection.

A Septic arthritis

Septic arthritis is usually characterised by sudden-onset pain and does not cause joint deformity. She has no tenderness at the ankle. A septic arthritis can occur in a joint with pre-existing deformity, but the normal white cell count, CRP and ESR go against this diagnosis.

B Osteoarthritis

OA does not cause such significant bony deformity – it is a painful, degenerative arthritis.

C Rheumatoid arthritis (RA)

RA is very unlikely to be asymmetrical, and joints are tender on palpation.

E Pyrophosphate arthropathy

Pseudo-gout does not cause joint deformity. Pseudo-gout is caused by calcium pyrophosphate crystal deposition in the affected joint space. The onset of symptoms in pseudo-gout tends to occur over a period of several days and is more common in the older population. The joints usually affected by pseudogout include the knee, wrist and shoulder.

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A 34-year-old right-handed woman complains of pain in her right wrist which has been evident for 3 months. Recently she has also noted some pain in her left wrist, although of much less severity. She works at a till in a superstore and has been finding it difficult to continue with her job. The examination reveals a localised swelling and tenderness over the lateral, dorsal aspect of the right wrist and mild tenderness in the left wrist, particularly over the radial aspect. The haematology and biochemistry blood test results are normal.

Which of the following is the most likely diagnosis?

A	De Quervain's tenosynovitis
B	Intersection syndrome
C	Wrist synovitis
D	Ganglion
E	Trigger thumb

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Which of the following is the most likely diagnosis?

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B	Intersection syndrome
C	Wrist synovitis
D	Ganglion
E	Trigger thumb

Explanation

A	De Quervain's tenosynovitis

This lady has tenderness at the thumb-sided tendons – at the radial side of the wrist and at the base of the thumb – and probably has an occupational aetiology given her job as checkout cashier.

De Quervain's tenosynovitis refers to inflammation of the abductor pollicis longus tendon at the wrist joint. It is best diagnosed by inspecting the wrist from the radial side, with the palms together. It is then seen as a unilateral swelling, extending from the first carpometacarpal joint proximally. The diagnosis is confirmed by Finkelstein's test. In this test, the patient is asked to bring the thumb across the palm and clasp the fingers around it. The examiner then pulls it in the ulnar direction, which elicits a sharp pain. This condition is commonly caused by occupational or avocational repetitive movement of the thumb, but has also been associated with RA, psoriatic arthritis, direct trauma, pregnancy and the post-partum period. Treatment options include splinting, steroid injections into the joint and surgical decompression of the tendon tunnel.

B	Intersection syndrome

This lady has irritation at the first dorsal compartment. Intersection syndrome is a painful condition that affects the thumb side of the forearm when inflammation occurs at the intersection of the muscle bellies of the abductor pollicis longus and extensor pollicis brevis crossing over the extensor carpi radialis longus and the extensor carpi radialis brevis. These 1st and 2nd dorsal muscle compartments intersect at this location, hence the name. The mechanism of injury is usually repetitive resisted extension, as with rowing, weight-lifting or pulling.

C	Wrist synovitis

This lady has localised swelling at the radial side (not the whole wrist). Wrist synovitis is inflammation of the wrist joint and therefore the whole wrist would be swollen diffusely.

D	Ganglion

A ganglion is a discrete, palpable lump.

E	Trigger thumb

A trigger digit is a common disorder characterised by catching, snapping or locking of the involved finger flexor tendon, associated with dysfunction and pain.

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A 30-year-old woman complains of severe headache, mainly in the occipital region, as well as irritability, low mood and lack of energy. Her husband informs you that he has noted her to be withdrawn and short-tempered. She also gives a history of a recent increase in hair loss, and joint pains, predominantly in the wrist and knees. She has had amenorrhoea for the last 3 months. She works as a secretary, and is now finding it extremely difficult to cope with both her work and household activities. She and her husband are requesting sick leave.

On examination, she looks unwell. Her temperature is 37.5°C, she is pale and there is an erythematous rash on her face. Joint examination is remarkable for tenderness in the wrists and knees, but no swelling. Cardiovascular, respiratory and abdominal examination are unrevealing. Neurological examination does not show focal neurological signs or neck stiffness.

Investigations:

Hb	9.7 g/dl
WCC	3.8×10^9/l
PLT	188×10^9/l
Neutrophils	2.1×10^9/l
Lymphocytes	0.8×10^9/l
ESR	88 mm/1st h
CRP	8.0 mg/l
AST	44 IU/l
ALP	156 IU/l
ALT	50 IU/l
ANA	+
DNA and ENA	Awaited
Urine dipstick	Protein trace

What is the most likely clinical problem that may explain the above?

A	Neuropsychiatric lupus
B	Viral meningitis
C	Lupus glomerulonephritis
D	Antiphospholipid antibody syndrome
E	Bacterial meningitis

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What is the most likely clinical problem that may explain the above?

A Neuropsychiatric lupus

B Viral meningitis

C Lupus glomerulonephritis

D Antiphospholipid antibody syndrome

E Bacterial meningitis

Explanation

A Neuropsychiatric lupus

This young lady is in the right demographic to suspect systemic lupus erythematosus (SLE), which is suggested by polyarthralgia, hair fall, facial rash and positive ANA. However, the symptoms of headache and mood changes point towards the possibility of neuropsychiatric lupus. Features of neurological disease in lupus range from the common, relatively harmless migraine headache, to major psychotic episodes and grand mal seizures, recognised in some lupus patients. Amenorrhoea is sometimes observed with neuropsychiatric lupus, and may be due to either interference with gonadotrophin release or associated autoimmune ovarian failure.

B Viral meningitis

The history is too protracted, and the non-neurological features (facial rash, hair fall) are more suggestive of connective tissue disease and do not fit with viral meningitis.

C Lupus glomerulonephritis

Lupus glomerulonephritis cannot be completely excluded, but active urinary sediment with proteinuria ++ on dipstick will be more suggestive.

D Antiphospholipid antibody syndrome

Antiphospholipid antibody syndrome (APLS) can cause headaches and migraines, but also dural sinus thrombosis. APLS should be considered, but is less likely as her platelets are normal and she has psychological features in addition to her severe headache.

E Bacterial meningitis

The history is too protracted, her CRP is normal and there is no meningism.

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A 20-year-old man presents with a 1-month history of intermittent fever accompanied by chest pain, which is worse on lying down. He has recently also noticed pain in the joints of his hands and feet. He is febrile, with a temperature of 39°C. His pulse is 98/min and his blood pressure is 110/70 mmHg. The positive findings on examination are enlarged anterior cervical lymph nodes, pericardial rub, mild hepatomegaly and synovitis of the proximal interphalangeal (PIP) and wrist joints.

Investigations:

Hb	10.5 g/dl
WBC	20 x 10^{9}/l
PLT	540 x 10^{9}/l
ESR	110 mm/1st hr
CRP	246 mg/l
ALT	69 IU/l
ALK-P	246 IU/l
Ferritin	4567 µg/l (normal range 14 – 200 µ/l)
CXR	Cardiomegaly
2-D echocardiogram	Pericardial effusion
MSU and blood culture	-
ANA, RF, ANCA	All -
CT abdomen	Hepatosplenomegaly

Which of the following is most likely diagnosis?

A	Systemic lupus erythematosus (SLE)
B	Mixed connective tissue disease (MCTD)
C	Undifferentiated connective tissue disease (UCTD)
D	Rheumatoid arthritis (RA)
E	Adult-onset Still's disease

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Explanation

E	Adult-onset Still's disease

This man has a long history of ever, arthritis, lymphadenopathy, serositis and hepatosplenomegaly consistent with Still's disease. Clinical features of adult-onset Still's disease include arthralgia or arthritis; a high fever (>39°C), especially in the afternoon and evening; fleeting salmon-pink maculopapular rash which is most prominent with fever; serositis; anaemia; elevated acute phase reactants; and evidence of reticuloendothelial activation. In between the febrile episodes the patient feels rather well. The laboratory investigations commonly reveal leucocytosis, thrombocytosis, markedly raised serum ferritin and an elevated erythrocyte sedimentation rate and C-reactive protein. Autoantibodies are negative.

A	Systemic lupus erythematosus (SLE)

A very high fever, raised CRP, organomegaly and negative ANA make SLE very unlikely. SLE is associated with a normal CRP and an elevated ESR. The presenting symptoms in SLE can be very variable due to the condition having multi-system effects ranging from indolent to fulminant, but the classic presentation is of the triad of arthralgia, fever and malar rash in a woman of child-bearing age.

B	Mixed connective tissue disease (MCTD)

A very high fever, raised CRP, organomegaly and negative ANA make MCTD very unlikely. MCTD is a term used to describe a condition that features overlap of autoimmune connective tissue disorders with certain laboratory findings to match. It is recognised to consist of the following core features:

- Raynauds
- Sclerodactily
- Arthritis/arthralgia
- Acrosclerosis
- Myositis
- Oesophageal dysmotility
- Pulmonary hypertension
- Lung fibrosis
- Raised anti-U1-RNP antibodies
- Antibodies against U1-70 kd small nuclear ribonucleoprotein (snRNP).

C	Undifferentiated connective tissue disease (UCTD)

A very high fever, raised CRP, organomegaly and negative ANA make connective tissue disease very unlikely. The term UCTD is used to describe patients who have symptoms of autoimmune disorders or connective tissue disease with particular laboratory findings to match, but who do not meet all the diagnostic criteria for the more well-defined conditions.

UCTD symptoms are similar to those of MCTD, but there are no antibodies to snRNP present.

D	Rheumatoid arthritis (RA)

This patient has a very high fever and his RF and CCP are negative, making RA very unlikely. Rheumatoid arthritis is a symmetrical autoimmune polyarthropathy causing pain, swelling and joint deformity. The patient may complain of morning stiffness and generalised malaise and will have raised inflammatory markers; rheumatoid factor is positive in around 70% of sufferers.

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A 26-year-old woman known to have lupus since the age of 19 years presents in the clinic with right groin pain. This started 4 months ago and has been progressively getting worse. The pain is present all the time and increases further on weight bearing. She walks with a limp. The range of movements at both hips is painful and restricted, the right much more than the left. Her medications include prednisolone 5 mg daily, azathioprine 125 mg daily, Adcal-D3® 1 tab twice daily and co-codamol.

Investigations:

Hb	10.2 g/dl
WBC	4.2 x 10^9/l
PLT	123 x 10^9/l
Neutrophils	2.8 x 10^9/l
Lymphocytes	0.9 x 10^9/l
ESR	4.5 mm/1st hour
CRP	4 mg/l
AST	33 IU/l
Creatinine	84 mmol/l
Urine dipstick	All normal

You order an urgent X-ray of the hips.

What is the most likely diagnosis?

A	Osteoarthritis of the hips
B	Trochanteric bursitis
C	Avascular necrosis of the hips
D	Rheumatoid arthritis (RA) of the hips
E	Sacroilitis

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Explanation

C	Avascular necrosis of the hips

Deprivation of blood supply to the cortex and medulla results in marrow cell death and causes AVN. The common causes are lupus, high-dose corticosteroid therapy, antiphospholipid antibody syndrome, sickle cell disease, alcoholism, Caisson's disease and Gaucher's disease. In lupus, femoral head involvement is the most common and in 90% of cases progresses to involve the opposite side after 12 months. The pain is often most severe and recalcitrant, with poor response to analgesic and anti-inflammatory medications. CRP and ESR may show mild/moderate elevation in this condition, or may be normal. Indeed no particular blood parameter is useful for diagnosis or assessing prognosis of this condition. Plain X-ray characteristically shows irregular contouring of the femoral head, although it may appear normal in the early phase. MRI is the most sensitive modality of imaging for AVN of the hip, and is the investigation of choice in patients where AVN is suspected but radiography is normal. Conservative treatment involves non-weight bearing to prevent the collapse of the femoral head and secondary osteoarthritis. Depending on the stage of the disease, surgical options include core decompression or replacement of the femoral head.

A	Osteoarthritis of the hips

He is far too young to have osteoarthritis of her hips.

B	Trochanteric bursitis

Trochanteric bursitis is characterised by lateral thigh pain and is worse on lying on the affected side.

D	Rheumatoid arthritis (RA) of the hips

This lady has known SLE, and her inflammatory markers are normal.

E	Sacroilitis

Sacroiliits does not occur with SLE (it occurs with ankylosing spondylitis, psoriatic arthritis, enteropathic arthritis and reactive arthritis) and is usually characterised by buttock pain, whereas buttock or groin pain can be associated with hip pathology.

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A 58-year-old male patient with well-controlled ankylosing spondylitis reminds you of his scheduled right knee replacement surgery in 6 weeks' time. His medications include etanercept 50 mg subcutaneously weekly, prednisolone 5 mg per day and co-codamol tablets.

What advice regarding his medication should be given prior to surgery?

A	Stop etanercept 4–6 weeks prior to surgery
B	Stop etanercept 2–4 weeks prior to surgery
C	Stop both etanercept and prednisolone 2–4 weeks prior to surgery
D	Keep the medications unchanged
E	Double the dose of etanercept

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D	Keep the medications unchanged
E	Double the dose of etanercept

Explanation

B	Stop etanercept 2–4 weeks prior to surgery

The British Society for Rheumatology (BSR) guidelines (January 2005) for prescribing tumour necrosis factor (TNF-α) blockers in adults with RA recommend withholding etanercept and other TNF-blockers (infliximab and adalimumab) for 2–4 weeks prior to a major surgical procedure. Stopping earlier may lead to disease flare-up and thus interfere with the surgery. Treatment may be restarted postoperatively if there is no evidence of infection and once wound healing is satisfactory. Small-dose prednisolone is safe – it doesn't increase the risk of infection or interfere with wound healing and therefore need not be stopped. However, care must be taken to administer 50–100 mg hydrocortisone perioperatively in order to meet with increased demands during the stress of major surgery.

A	Stop etanercept 4–6 weeks prior to surgery

This may increase the risk of RA disease flare-up.

C	Stop both etanercept and prednisolone 2–4 weeks prior to surgery

This may increase the risk of an addisonian crisis.

D	Keep the medications unchanged

This may increase the risk of infection.

E	Double the dose of etanercept

This may increase the risk of infection and is not a licensed dose regimen for etanercept, which could have potentially dangerous effects.

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The dual X-ray bone absorptiometry (DXA) scan results of a 60-year-old man with RA being treated with prednisolone 7.5 mg per day and methotrexate 10 mg per week show T scores of -1.6 at spine and - 1.8 at hips.

Which of the following is the optimal therapy for this patient?

A	Calcium and vitamin D alone
B	Parathyroid hormone with calcium supplementation
C	Alendronate with calcium supplementation
D	Strontium
E	No change in therapy

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Calculator

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Explanation

A T score of less than -2.5 at hip or spine is indicative of osteoporosis. However, in patients on steroid therapy, a score of -1.5 is taken as a cut-off value to start osteoporosis therapy. Use of bisphosphonates (alendronate and risedronate) has been shown to be associated with a reduced risk of fractures. Bisphosphonates are most commonly used first-line agents for the treatment of osteoporosis. Calcium and vitamin D alone are not sufficient in reducing the risk of fractures, although they do offer some benefit. They may be given concomitantly with bisphosphonates. Strontium and parathyroid hormone are used in case of intolerance or lack of response to bisphosphonates, although recent labelling changes around risks of cardiovascular and thromboembolic events associated with strontium use mean that it is likely to become the treatment of last resort. Denosumab is now also available as an alternative to bisphosphonates.

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A 71-year-old woman who has had rheumatoid arthritis (RA) since the age of 50, being treated with 12.5 mg methotrexate per week, informs you that she has recently had three courses of antibiotics for feeling unwell and recurrent upper respiratory tract infections. Examination reveals rheumatoid nodules over the extensor aspect of both elbows, swelling and tenderness in occasional PIP and metacarpophalangeal (MCP) joints, and bilaterally replaced knee joints. Her chest is clear and cardiovascular system examination is unremarkable. Her abdominal examination shows mild splenomegaly.

Investigations:

Hb	10.1 g/dl
WBC	3.2 x 10^9/l
Neutrophils	1.9 x 10^9/l
Lymphocytes	0.9 x 10^9/l
Eosinophils	0.1 x 10^9/l
Monocytes	0.3 x 10^9/l
ESR	88 mm/1st hour
Rheumatoid factor (RF)	+
Antinuclear antibody (ANA)	+

The most likely diagnosis is?

A	Lymphoma
B	Felty's syndrome
C	Methotrexate-induced leucopenia
D	Rheumatoid lung
E	Systemic lupus erythematosus

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Investigations:

Hb	10.1 g/dl
WBC	3.2 x 10^9/l
Neutrophils	1.9 x 10^9/l
Lymphocytes	0.9 x 10^9/l
Eosinophils	0.1 x 10^9/l
Monocytes	0.3 x 10^9/l
ESR	88 mm/1st hour
Rheumatoid factor (RF)	+
Antinuclear antibody (ANA)	+

The most likely diagnosis is?

A Lymphoma

B Felty's syndrome

C Methotrexate-induced leucopenia

D Rheumatoid lung

E Systemic lupus erythematosus

Explanation

B Felty's syndrome

This lady has the triad of RA, splenomegaly and neutropenia. Felty syndrome usually occurs in patients with long-standing seropositive rheumatoid arthritis (RA). Two-thirds of patients are female. The clinical features include RA, leucopenia, lymphadenopathy and splenomegaly. Leg ulcers, recurrent infections and episcleritis may also be present. Initial treatment is for the underlying rheumatoid arthritis, including disease-modifying anti-rheumatic drugs (DMARDs) and NSAIDs. More severe cases refractory to treatment may benefit from weekly injections of colony-stimulating factor to stimulate production of granulocytes. Splenectomy is also an option for certain severe cases.

A Lymphoma

This lady has the triad of RA, splenomegaly and neutropenia – Felty syndrome. There are no signs that would make lymphoma more likely, such as lymphadenopathy or systemic upset (fevers, weight loss, sweats, etc.).

C Methotrexate-induced leucopenia

Although she is on MTX and leucopenic, the splenomegaly is not explained by this option.

D Rheumatoid lung

This lady may well have rheumatoid lung, but the neutropenia and splenomegaly are not explained by this option.

E Systemic lupus erythematosus

Presenting symptoms in SLE can be very variable due to the condition having multi-system effects, but the classic presentation is of fever, arthritis, and malar rash affecting a woman of child-bearing age. The age of the patient, together with the history of rheumatoid arthritis and splenomegaly, would be more suggestive of Felty syndrome in this scenario.

6885

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You are seeing a 21-year-old man with a 3-year history of inflammatory back pain. You make a presumptive diagnosis of ankylosing spondylitis (AS). You order X-rays of the lumbosacral spine, sacroiliac joints and HLA B27.

Which of the following statements is correct with regard to HLA B27?

A	It can be used as screening test for AS in the general population
B	The likelihood of a positive test depends on the racial and ethnic background of the patient
C	The test helps distinguish AS from other spondyloarthropathies
D	HLA B27 is essential for the diagnosis of AS
E	Acute anterior uveitis is relatively more common in B27-negative than –positive patients

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You are seeing a 21-year-old man with a 3-year history of inflammatory back pain. You make a presumptive diagnosis of ankylosing spondylitis (AS). You order X-rays of the lumbosacral spine, sacroiliac joints and HLA B27.

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D	HLA B27 is essential for the diagnosis of AS
E	Acute anterior uveitis is relatively more common in B27-negative than –positive patients

Explanation

B	The likelihood of a positive test depends on the racial and ethnic background of the patient

The sensitivity and specificity of the test depend on the racial and ethnic background of the patient. The prevalence of HLA B27 varies among ethnic groups and races. Inuits have been shown to have the highest frequency of the gene (25–40%), with an overall prevalence of spondyloarthropathies between 2 and 4%. HLA B27 frequency is only 8–9% in people from Holland and Germany. Accordingly, the prevalence of spondyloarthropathies (2%) is lower than in Inuit.

A	It can be used as screening test for AS in the general population

Although HLA B27 may be helpful in diagnosis, 10% of the asymptomatic healthy normal population may be HLA B27 positive and therefore it cannot be used as a screening test.

C	The test helps distinguish AS from other spondyloarthropathies

HLA B27 positivity does not distinguish between the axial spondyloarthropathies.

D	HLA B27 is essential for the diagnosis of AS

Most AS patients do not need HLA B 27 testing if they have certain clinical and radiological features. Patients can fulfil the criteria for AS without testing positive for HLA B27.

E	Acute anterior uveitis is relatively more common in B27-negative than –positive patients

Acute anterior uveitis is more common in B27-positive than -negative patients.

6886

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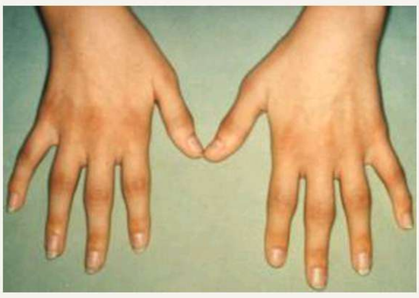
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Responses Total:	35
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A 32-year-old woman presents with a history of pain and swelling accompanied by early morning stiffness of 30 minutes affecting her hands and feet. She had been fit and healthy until the onset of joint symptoms 10 weeks ago. The findings of examination of her hands are shown in the figure below.



Investigations showed the following:

Hb	12.1 g/dl
WBC	10.5 x 10^9/l
PLT	450 x 10^9/l
ESR	67mm/1st hour
CRP	45 mg/l
AST	33 IU/l
ALK-P	313 IU/l

You order an autoantibody screen and X-ray of the hands and feet.

What is the most likely diagnosis?

A	Early RA
B	Recurrent symmetrical seronegative arthritis with pitting oedema (RS3PE)
C	Early scleroderma
D	Osteoarthritis
E	Reflex sympathetic dystrophy syndrome (RSDS)

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C	Early scleroderma
D	Osteoarthritis
E	Reflex sympathetic dystrophy syndrome (RSDS)

Explanation

Symmetric involvement of the hands is the hallmark of RA. In early disease, there may be swelling of the wrists, MCP or PIP joints, but no deformity. The above symptoms and signs in association with an acute phase response are strongly suggestive of early RA in this patient. Treatment includes early aggressive DMARD therapy, analgesics and anti-inflammatories, a physiotherapy and occupational therapy assessment, and education on RA as well as on side effects and the monitoring of DMARDs.

The syndrome of recurrent symmetrical seronegative arthritis with pitting oedema (RS3PE) was described in the late 1980s. In addition to the isolated or "pure" type which probably forms part of the clinical spectrum of polymyalgia rheumatica, inflammatory swelling with pitting oedema of the dorsum of the hands and/or feet can be observed in different inflammatory rheumatic diseases as well as in haematological and solid malignancies. Serological testing is typically negative except for a mild to moderate elevation of the erythrocyte sedimentation rate. Presentation is most often in elderly patients, males more often than females and as such this is less likely than RA to be the diagnosis here.

Reflex sympathetic dystrophy syndrome (RSDS) commonly involves only one extremity, presenting with pain, swelling, redness and impaired function, usually in the context of preceding trauma or surgery.

6892

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Responses Total:	36
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You have been asked to review a 56-year-old woman who has been admitted with a history of feeling unwell for the past 2 months. On further questioning, she admits having discoloration of the fingers and hands, loss of appetite and weight, joint pains and difficulty in mobilising. On examination, you notice a rash affecting the hands and face hands (as shown below), tenderness over the wrists and knees, crackles over both lung bases and generalised muscle weakness. Results of investigations are awaited.



What are the underlying features on examination of this patient's hands?

A	Raynaud's phenomenon
B	Tinea infection
C	Contact dermatitis
D	Gottron's papules
E	Scabies

6893

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You have been asked to review a 56-year-old woman who has been admitted with a history of feeling unwell for the past 2 months. On further questioning, she admits having discoloration of the fingers and hands, loss of appetite and weight, joint pains and difficulty in mobilising. On examination, you notice a rash affecting the hands and face hands (as shown below), tenderness over the wrists and knees, crackles over both lung bases and generalised muscle weakness. Results of investigations are awaited.



What are the underlying features on examination of this patient's hands?

A	Raynaud's phenomenon
B	Tinea infection
C	Contact dermatitis
D	Gottron's papules
E	Scabies

Explanation

D	Gottron's papules

This patient has muscle weakness, Gottron's papules and likely heliotrope facial rash, polyarthralgia and Raynaud's.

The image above shows the typical appearance of dermatomyositis, with thickened patches on the dorsal surface of the knuckles. The above clinical picture with findings of Gottron's papules is suggestive of dermatomyositis (skin + muscle involvement) rather than polymyositis: polymyositis does not have any skin features. Heliotrope rash (periorbital lilac-coloured rash) is the characteristic facial rash of dermatomyositis – the word is derived from the name of a flower. It is recommended that all adult patients with dermatomyositis should be screened for underlying malignancy.

A	Raynaud's phenomenon

Although she has symptoms of Raynaud's phenomenon, this is not a cause of the features in the image.

B	Tinea infection

Tinea is a fungal infection.

C	Contact dermatitis

These features are characteristic of Gottron's papules.

E	Scabies

These features are characteristic of Gottron's papules. Scabies is intensely itchy and therefore one may see excoriation marks and wheals where the scabies mites have burrowed under the skin, especially at the spaces between the fingers.

6893

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Responses Total:	37
Responses - % Correct:	0%

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A 70 year old with brittle asthma presents with left hip and groin pain. It is very painful to bear weight. An X-ray of her hip reveals no evidence of a fracture. She is confused and cannot give a history. On examination, she is afebrile and there is no redness or warmth around the hip. You notice that her fingers appear deformed.



What investigation will give the definitive diagnosis for her hip pain?

A	Inflammatory markers
B	MRI hip
C	Auto-antibodies
D	Arthroscopy
E	X-ray knee

6894

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What investigation will give the definitive diagnosis for her hip pain?

A	Inflammatory markers
B	MRI hip
C	Auto-antibodies
D	Arthroscopy
E	X-ray knee

Explanation

B	MRI hip

The most likely diagnosis is of avascular necrosis of the hip, given the clues to oral steroid use – 'brittle' asthma as well as rheumatoid arthritis. An MRI is the diagnostic imaging technique of choice.

A	Inflammatory markers

Although this lady is likely to have rheumatoid arthritis, as suggested by the Boutonniere deformity, inflammatory markers are unlikely to help – the history suggests a monoarthritis but dissuades you from a septic arthritis, with the absence of fever or erythema.

C	Auto-antibodies

Auto-antibodies may help you confirm a diagnosis of rheumatoid arthritis, but would not help delineate the cause of her acute hip pain.

D	Arthroscopy

Arthroscopy is very invasive and unnecessary in this case, to diagnose avascular necrosis.

E	X-ray knee

It is always important to think of the joint below (and above if applicable), as pain may be referred. However, in this case with groin pain and likely long-term steroid use, the most likely diagnosis is avascular necrosis of the hip. The hip is a common site, as it is supplied by an end-artery.

6894

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You are intrigued by a skin lesion on the hands of a 47-year-old woman who has accompanied her daughter (who is having joint pains) to your clinic. The clinical appearance is shown below. The woman informs you that the rash has been present for 2–3 years. She denies any other similar lesions or functional impairment due to this. Her general health remains good.



Which of the following is the most likely diagnosis?

A	Tinea infection
B	Lichen sclerosus et atrophicus
C	Morphea
D	Leprosy
E	Vitiligo

6895

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B	Lichen sclerosus et atrophicus
C	Morphea
D	Leprosy
E	Vitiligo

Explanation

Morphea is a form of localised scleroderma that may be circumscribed or generalised. In circumscribed morphea, there may be just one or two lesions with no generalised spread. The changes often begin with small, violaceous, or erythematous skin lesions, which enlarge and progress to firm ‘hidebound’ skin with a variable degree of hypo- or hyperpigmentation. These lesions eventually settle into a waxy, white appearance with subsequent atrophy. Lesions vary in diameter between 1 and 10 cm. The condition generally resolves within 3–5 years, although sometimes a patch may persist for over 25 years.

Auto-antibodies such as anti-nuclear antibody (ANA) are only rarely positive in localised forms of scleroderma, as against systemic subtypes where a positive ANA is one of the hallmarks of the disease.

Leprosy is associated with peripheral nerve thickening, not seen here, and vitiligo is associated with generalised areas of depigmentation. Tinea is associated with an annular lesion with scaling/erythema around the margin, and lichen sclerosis commonly affects the genitalia.

6895

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A 60-year-old woman presents with a 1-year history of progressive pain and stiffness involving the small joints of her hands and knees. She has xanthelasmas in the periorbital areas and nodules over the hands as shown below. There is tenderness over the DIP and PIP joints, with mild instability at the occasional PIP joints. Her knees are tender and crepitus is palpable bilaterally. X-rays of the hands show preservation of the DIP joint space with erosions having clear margins.



Which of the following is the most likely diagnosis?

A	Rheumatoid nodules
B	Methotrexate-induced nodules
C	Multicentric reticulohistiocytosis
D	Xanthomata
E	Molluscum contagiosum

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C	Multicentric reticulohistiocytosis
D	Xanthomata
E	Molluscum contagiosum

Explanation

C	Multicentric reticulohistiocytosis

The characteristic nail fold nodules of multicentric reticulohistiocytosis have the appearance of 'coral beads'. Nodules may be numerous, may grow to as large as 2 cm and may involve mucosal surfaces. The hand radiograph above shows erosive changes in multiple joints. Distal interphalangeal erosions are characteristic and may lead to pseudo-widening of the joint spaces. Multicentric reticulohistiocytosis is a rare, non-Langherhans cell histiocytosis with skin and joint involvement. Nearly all organs can be involved. Association with cancer occurs in about 25% of cases. Association with autoimmune diseases has also been recorded. Microscopic examination shows a histiocytic nodular infiltrate composed of giant cells with ground-glass appearance and periodic acid-schiff (PAS)-positive cytoplasm.

A	Rheumatoid nodules

Rheumatoid arthritis (RA) does not cause erosions at the DIPJs – RA usually affects MCPs and PIPs, not DIPs.

B	Methotrexate-induced nodules

There is no history of her being on methotrexate. NB: Methotrexate may cause nodulosis or accelerated nodulosis.

D	Xanthomata

Although this lady has xanthelasma on her eyelids, the image does not look like xanthomata, which are small, yellowish-orange to reddish-brown papules.

E	Molluscum contagiosum

Molluscum lesions look like small, umbilicated, pearly iridescent papules and are caused by a pox virus.

6896

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You review a 67-year-old man who has been previously given a diagnosis of osteoarthritis. He presents with acute on chronic pain in his first metatarsophalangeal (MTP) joint. He has a past history of hypertension for which he takes bendroflumethiazide 5 mg per day. On examination the joint is hot and red and has a knobbly appearance. X-ray reveals a number of punched out bony cysts on X-ray.

Which of the following is the most appropriate long-term management for this patient?

A	Start allopurinol
B	Start ibuprofen
C	Stop bendroflumethiazide and substitute a calcium antagonist
D	Start flucloxacillin
E	Advise dietary restriction of rich foods

7045

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D	Start flucloxacillin
E	Advise dietary restriction of rich foods

Explanation

This patient has chronic tophaceous gout, which is usually associated with chronic renal impairment or long-term use of diuretic therapy. Deposits of sodium urate occur in skin and around joints, larger deposits are unsightly and may ulcerate. Whenever possible, where the condition is associated with diuretic use, the diuretics should be substituted for another medication. In this case ibuprofen may be used to get over the acute attack but should be avoided in the long term.

7045

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You review a 62-year-old woman who has severe rheumatoid arthritis. She takes regular non-steroidal anti-inflammatory agents and you have recently had to withdraw methotrexate from her regime due to toxicity. She has previously been treated with sulphasalazine. You elect to begin a trial of adalimumab.

What is the mode of action of adalimumab?

A	It is a TNF-α antagonist
B	It is a TNF-α agonist
C	It is anti-CD20
D	It is an anti-CTLA-4
E	It is an IL-6R blocker

7604

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E	It is an IL-6R blocker

Explanation

A	It is a TNF-α antagonist

Adalimumab is a competitive inhibitor tumour necrosis factor (TNF) binding to cell surface receptors. Adalimumab can also modulate biological responses controlled by additional downstream molecules (e.g. cytokines, adhesion molecules or proteinases) that are induced or regulated by TNF. TNF is a dominant cytokine involved in the pathogenesis of both rheumatoid arthritis and plaque psoriasis. Side effects include allergic reactions and itching at the site of injection, transient fever and symptoms of upper respiratory tract infection soon after injection. Full anaphylactic-type reactions are thankfully much rarer. Adalimumab is indicated for the treatment of rheumatoid arthritis, either alone or in combination with methotrexate.

B	It is a TNF-α agonist

Adalimumab is a TNF-a antagonist, not an agonist.

C	It is anti-CD20

Rituximab is a monoclonal antibody directed against CD20

D	It is an anti-CTLA-4

Abatacept is an anti-CTLA-4 molecule (blocks T-cell co-stimulation).

E	It is an IL-6R blocker

Tocilizumab is an IL-6 receptor blocker.

7604

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A 72-year-old man presents to the A&E department with of a 2-day history of a swollen, tender right calf. He had noticed some aching behind the knee prior to the onset of these symptoms and had even thought that there had been a lump behind the joint, but this is no longer present. He is otherwise fit and well and is not on any medications except for over-the-counter multivitamins. Examination confirms the presence of a swollen, tender, warm right calf. No neurological abnormality was seen on examination of the legs. The foot pulses were present. The remainder of the general examination was normal. The casualty officer arranges for the patient to have an urgent Doppler ultrasound and the report states that the vascular lumen was compressible. Based on the casualty officer's suspicions, the patient then undergoes a contrast arthrogram of the right knee which shows contrast medium in the soft tissues of the calf.

Which of the following medical conditions is most likely to be associated with the underlying diagnosis in this case?

A	Gout
B	Pseudogout
C	Systemic lupus erythematosus
D	Tuberculosis
E	Hyperthyroidism

7634

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B	Pseudogout
C	Systemic lupus erythematosus
D	Tuberculosis
E	Hyperthyroidism

Explanation

B	Pseudogout

This man has a ruptured Baker cyst, secondary to pseudo-gout, which is associated with osteoarthritis.

A Baker (popliteal) cyst is the most common mass in the popliteal fossa. Since the cyst is an extension of the knee joint, it is lined by synovium. Ultrasonography is the imaging technique of choice in the evaluation of a popliteal mass, but using this technique it may be difficult to show a true connection with the joint space to establish a definitive diagnosis of popliteal cyst. The most common complication is rupture or dissection of fluid into the adjacent proximal gastrocnemius muscle belly which results in a syndrome mimicking the symptoms of a deep vein thrombosis. Doppler ultrasonography will, however, show the vascular lumen to be compressible (the lumen is not compressible in deep vein thrombosis due to the presence of the thrombus). A number of conditions are associated with popliteal cysts, with osteoarthritis being the most common cause, followed by rheumatoid arthritis and other inflammatory arthritides, as well as miscellaneous conditions including hypothyroidism, sarcoidosis and chronic dialysis.

A	Gout

Gout is weakly associated with Baker cysts, but there are no features to suggest gout such as dehydration, diuretic use, chemotherapy, etc.

C	Systemic lupus erythematosus

SLE arthritis usually presents as a small joint polyarthritis affecting the hands.

D	Tuberculosis

TB of the knee usually presents as a chronic, cold (non-vascular) synovitis.

E	Hyperthyroidism

Hypo- (not hyper-) thyroidism is associated with a ruptured Baker cyst.

7634

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A 55-year-old man with well-controlled ulcerative colitis (on azathioprine 100 mg), hypertension (on lisinopril) and diabetes (on metformin), presents to his GP with exquisite pain affecting the right big toe. He has had several attacks this year, which usually subside with regular diclofenac for a week. His GP starts him on colchicine and when the attack has settled, adds in allopurinol. He returns to the GP two months later to pick up his repeat prescriptions. Before his GP issues the prescription, he reviews this gentleman's blood tests (below) and is alarmed. He phones the gastroenterology registrar on call, as he suspects azathioprine toxicity.

Investigations:

Hb	5.8 g/dl
WCC	1.8×10^9/l
PLT	88×10^9/l
Neutrophils	0.5×10^9/l
Lymphocytes	0.4×10^9/l
ESR	20 mm/1st h
CRP	8.0 mg/l

What is the underlying cause of azathioprine toxicity?

A	Gout
B	Allopurinol
C	Colchicine
D	Diclofenac
E	Metformin

7685

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B Allopurinol

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D Diclofenac

E Metformin

Explanation

B Allopurinol

This patient is pancytopenic following an interaction between allopurinol and azathioprine. The combination of xanthine oxidase inhibition (allopurinol) and azathioprine potentiates the formation of mercaptopurine metabolites, which leads to significant and life-threatening bone marrow suppression. Allopurinol should never be co-prescribed with azathioprine.

A Gout

Gout *per se* does not cause azathioprine toxicity.

C Colchicine

Very rarely colchicine may cause myelosuppression.

D Diclofenac

Although the more likely drug culprit is allopurinol, diclofenac may lead to renal impairment and decreased clearance of azathioprine.

E Metformin

Metformin does not interact with azathioprine.

7685

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A 22-year-old lady presents with a 3-day history of right knee and left middle finger pain and swelling. She has no previous history of joint problems. On systematic enquiry she denies any recent infection. She has recently returned from a holiday with 4 girlfriends to Spain. On examination she is pyrexial with a temperature of 38.7°C, and a tachycardia of 110 beats/min. She is noted to have small pustules on the sides of some fingers, and a diffusely red swollen painful middle finger that she cannot flex. She also has pitting in some nails with hypertrophic plaques of scaling skin on both knees. She has a similar lesion in her scalp behind the right ear. Her right knee is red and hot and very painful and held in slight flexion. She resists any movement of it. General medical examination is otherwise unremarkable.

The most likely diagnosis is:

A	Psoriatic arthritis
B	Reactive arthritis
C	Rheumatoid arthritis
D	Septic arthritis
E	Mixed connective tissue disease

7722

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A 22-year-old lady presents with a 3-day history of right knee and left middle finger pain and swelling. She has no previous history of joint problems. On systematic enquiry she denies any recent infection. She has recently returned from a holiday with 4 girlfriends to Spain. On examination she is pyrexial with a temperature of 38.7°C, and a tachycardia of 110 beats/min. She is noted to have small pustules on the sides of some fingers, and a diffusely red swollen painful middle finger that she cannot flex. She also has pitting in some nails with hypertrophic plaques of scaling skin on both knees. She has a similar lesion in her scalp behind the right ear. Her right knee is red and hot and very painful and held in slight flexion. She resists any movement of it. General medical examination is otherwise unremarkable.

The most likely diagnosis is:

A	Psoriatic arthritis
B	Reactive arthritis
C	Rheumatoid arthritis
D	Septic arthritis
E	Mixed connective tissue disease

Explanation

This is all suggestive of disseminated gonococcal infection. Although the patient has what sounds like psoriasis, the onset is more rapid, and single joint disease is more severe than that seen in psoriatic arthritis. Reactive arthritis is a diagnosis of exclusion, and there is nothing in the recent history to support this, although the scaling skin on her knees and nail pitting is suggestive of psoriasis. The presentation is totally uncharacteristic of rheumatoid arthritis, and mixed connective tissue disease is just a red herring. Immunocompetent individuals can fall foul of disseminated gonococcus, and present with an oligoarthritis. Women are more prone to this than men, as the symptoms of urogenital gonococcal infection might not be so dramatic. She is systemically unwell. The pustules on her fingers should be ruptured and swabbed as they may grow gonococcus. She needs blood cultures and aspiration of the knee and finger if there is fluctuance that can be needled. She requires appropriate intravenous antibiotics (usually ceftriaxone but local microbiological advice would be essential) quickly as disseminated gonococcus can kill.

7722

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Responses Correct:	0
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Responses Total:	45
Responses - % Correct:	0%

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A 47-year-old patient presents with a 5-month history of an insidious onset of polyarthralgias predominantly affecting the hands and feet. The joints can swell at times and are stiff in a morning. The duration of the stiffness is variable but can last for 2 h. She has had limited response to diclofenac. Systematic enquiry is unremarkable. Examination reveals tender swelling of the metacarpophalangeal joints of both hands, and tenderness on squeezing the metatarsophalangeal joints. The rest of the examination is unremarkable.

Which of the following tests will be diagnostically most informative?

A	Rheumatoid factor
B	Hand and feet X-rays
C	Erythrocyte sedimentation rate
D	C-reactive protein
E	Anti-nuclear antibodies

8514

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Normal Values

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Which of the following tests will be diagnostically most informative?

A	Rheumatoid factor
B	Hand and feet X-rays
C	Erythrocyte sedimentation rate
D	C-reactive protein
E	Anti-nuclear antibodies

Explanation

The most likely diagnosis is rheumatoid arthritis. In the early stages of an insidious onset of the disease, the acute phase markers (erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP)) are often normal, particularly when small joints are involved. Rheumatoid factor is only positive in 60–70% of patients, and anti-nuclear antibodies in even less. By this stage of symptoms the patient will have developed periarticular osteopaenia on X-rays at the very least, and may well have marginal erosions at affected joints.

Foot joints are often radiologically affected before hand joints. In summary, at this stage, the most likely abnormalities on the list that will help with a diagnosis are the X-rays. Anti-citrullinated antibodies have recently become available and add to both the sensitivity with respect to diagnosis of rheumatoid arthritis, and are associated with more severe disease.

8514

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Responses Correct:	0
Responses Incorrect:	46
Responses Total:	46
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A 62-year-old lady has attended the Emergency Department with several days of bilateral shoulder weakness and pain. She smokes 10 cigarettes per day, and has suffered from a cough in the mornings over the past few months. There are no abnormalities on plain X-rays, but the Emergency Department doctor was concerned about a purplish discoloration around the eyes and prominent nail fold telangiectasia, which the patient had not really noticed before. CK is raised at 2820 U/l.

Which of the following would you do next for this patient?

A	Autoantibody profile
B	Serum erythrocyte sedimentation rate
C	Analgesia and physiotherapy
D	Weekly methotrexate
E	Malignancy screen

8525

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Normal Values

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A	Autoantibody profile
B	Serum erythrocyte sedimentation rate
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E	Malignancy screen

Explanation

E	Malignancy screen

This lady is a smoker with a cough and has features of dermatomyositis (muscle weakness, heliotrope, dilated nail fold capillaries and raised CK), which may be paraneoplastic in 15% of cases.

Polymyositis causes a symmetrical proximal muscle weakness, and skin signs of dermatomyositis include macular 'shawl sign' rash over the back and shoulders, heliotrope rash on cheeks and eyelids, nail fold erythema and Gottron's papules. Rough papules on extensor surfaces of the phalanges are pathognomonic if there is a history of weakness and elevated creatine kinase (CK). In older patients (>40 years) there is an increased risk of malignancy, which must be extensively investigated. Thorough clinical examination should include per rectum, breasts and lymph nodes; investigations should include chest X-ray, ultrasound scan of the abdomen/pelvis, mammography and prostate-specific antigen (PSA) (men).

A	Autoantibody profile

ANA can be negative (it is positive in 40–80% of cases) and only 20% have a myositis-associated antibody, of which Jo-1 is the most common.

B	Serum erythrocyte sedimentation rate

An ESR is non-specific, not diagnostic, and may be normal in dermatomyositis.

C	Analgesia and physiotherapy

Although analgesia and physiotherapy are part of the management, this patient may need prednisolone and treatment of the underlying cancer.

D	Weekly methotrexate

This patient may do well with prednisolone and treatment of the underlying cancer without any need for a DMARD.

8525

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A 30-year-old lady with a history of systemic lupus erythematosus presents with a 3-day history of cough and pleuritic chest pain. She feels generally lethargic and unwell. She takes hydroxychloroquine 200 mg od for her lupus and was recently started on phenytoin after two seizures.

Investigations:

Hb	11.3 g/dl
WCC	13.5 × 10^9/l
PLT	233 × 10^9/l
ESR	54 mm/1st h
CRP	63 mmol/l
Na^+	137 mmol/l
K^+	3.8 mmol/l
Creatinine	76 mmol/l
Urea	6.7 mmol/l
Anti-nuclear antibodies	+
Anti-DNA	+, low titre
Anti-histone antibody	-

What is the treatment of choice?

A	Stop phenytoin
B	Start prednisolone 30 mg od
C	Start amoxicillin 500 mg tds
D	Start ibuprofen 400 mg tds
E	Stop hydroxycholoroquine

8540

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Calculator

Normal Values

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D	Start ibuprofen 400 mg tds
E	Stop hydroxycholoroquine

Explanation

C Start amoxicillin 500 mg tds

This lady has a raised CRP, indicating infection. Patients with SLE are more prone to infections as a consequence of disease-specific factors, such as low complement, cytopenia, immune dysfunction and immunosuppressive agents.

A Stop phenytoin

Phenytoin can induce a lupus-like syndrome, but this is much less common, and her anti-histone antibodies are negative.

B Start prednisolone 30 mg od

This lady does not have a lupus flare-up, because her CRP is elevated (indicating infection), lupus activity markers such as WCC and platelets are normal, and anti-dsDNA Abs are of low titre. SLE flare-ups may be associated with a raised ESR, normal CRP, cytopenia, rising anti-dsDNA titre and falling complement.

D Start ibuprofen 400 mg tds

We try to avoid NSAIDs as much as possible in SLE patients, to avoid any renal impairment.

E Stop hydroxycholoroquine

Hydroxychloroquine does not suppress the immune system and therefore can be continued during active infection. Stopping it may increase the risk of an SLE flare-up.

8540

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You are seeing a 54-year-old woman in the clinic. She has had rheumatoid arthritis (RA) for the past 4 years and is on treatment with methotrexate 20 mg per week. She complains of pain in the joints of the hands and tingling/numbness over the fingers of both hands, these being present for the last 6 months. The pain in her joints is present all the time and is worse in the mornings. Paraesthesia occurs intermittently and awakens her in the night. Examination reveals mild swelling and tenderness over the small joints of the hands and wrists. There is no motor or sensory deficit on neurological examination.

Investigations:

Hb	11.4 g/dl
WCC	9.6×10^9/l
PLT	234×10^9/l
ESR	38 mm/1st h
CRP	11 mg/l

What would be the most appropriate further investigation at this stage?

A	Urgent magnetic resonance (MR) scan of the cervical spine
B	Routine MR of the cervical spine
C	X-ray of the hands
D	MR of the hands
E	Electromyogram (EMG)/nerve conduction studies

8599

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Calculator

Normal Values

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Explanation

E Electromyogram (EMG)/nerve conduction studies

This patient has carpal tunnel syndrome (CTS), as evident by paraesthesia in the hands especially at night. CTS occurs as a result of compression of the median nerve at the wrist and characteristically affects the thumb and lateral two fingers. It is seen commonly in rheumatoid arthritis (RA), most often due to entrapment of the median nerve by synovial swelling. Treatment includes the use of resting hand splints, local corticosteroid injections or median nerve release surgery. An electromyogram (EMG)/nerve conduction study is useful for confirming clinical diagnosis prior to actual surgery.

A Urgent magnetic resonance (MR) scan of the cervical spine

This lady has carpal tunnel syndrome, where the median nerve is usually compressed at the wrist. Cervical spine imaging is not indicated.

B Routine MR of the cervical spine

This lady has carpal tunnel syndrome, where the median nerve is usually compressed at the wrist. Cervical spine imaging is not indicated.

C X-ray of the hands

X-rays are not helpful in the diagnosis of carpal tunnel syndrome or assessing RA disease activity, but may be useful in detecting damage resulting from RA.

D MR of the hands

MRI imaging of the hands may not show median nerve compression. It is very expensive and an insensitive method for detection of carpal tunnel syndrome. MR imaging may be helpful in looking for RA disease activity, although an ultrasound is cheaper and faster (but less sensitive).

8599

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Responses Total:	49
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You are called to see a 63-year-old male in the surgical ward, who underwent hernia repair surgery 4 days ago. He is complaining of pain and swelling in the right knee for the past 2 days. He describes the pain as being severe and similar to previous episodes affecting either the knees or toes intermittently. He reminds you that the medication he regularly takes for joint pains has been discontinued during the present admission. You aspirate 10 ml of synovial fluid from his red, swollen and tender right knee and examine it under microscope.

What is the most likely microscopic appearance of the joint aspirate fluid?

A	Neutrophils and negatively birefringent crystals
B	Lymphocytes and negatively birefringent crystals
C	Neutrophils and positively birefringent crystals
D	Lymphocytes and positively birefringent crystals
E	Both negatively and positively birefringent crystals

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Normal Values

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D	Lymphocytes and positively birefringent crystals
E	Both negatively and positively birefringent crystals

Explanation

A	Neutrophils and negatively birefringent crystals

The patient is having an acute attack of gout, precipitated by stopping allopurinol and the stress of surgery. The synovial fluid will show an abundance of neutrophils and negatively birefringent, needle-shaped urate crystals.

B	Lymphocytes and negatively birefringent crystals

Gouty fluid shows neutrophils (not lymphocytes). Lymphocytes are more characteristic of chronic infections

C	Neutrophils and positively birefringent crystals

Gouty fluid shows neutrophils and negatively (not positive) birefringent crystals. Calcium pyrophosphate dehydrogenase (CPPD) crystals seen in pseudo-gout show positive birefringence and are rhomboid-shaped.

D	Lymphocytes and positively birefringent crystals

Calcium pyrophosphate dehydrogenase (CPPD) crystals seen in pseudo-gout show positive birefringence and are rhomboid-shaped.

E	Both negatively and positively birefringent crystals

Gout crystals are negatively birefringent and pseudo-gout crystals are positively birefringent

8600

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A 55-year-old woman with rheumatoid arthritis presents for review. She has recently returned from a holiday to Spain and complains of a rash on her face and upper chest. On examination she has a florid rash on her face, and on her upper body which follows the line of her swimsuit. Medication includes captopril for hypertension, and sulfasalazine for arthritis. Blood testing reveals positive antinuclear antibodies, positive rheumatoid factor, normal C3/C4 levels and negative anti-dsDNA antibodies.

Which of the following diagnoses fits best with this clinical picture?

A	Mixed connective tissue disease
B	Flare of rheumatoid arthritis
C	Drug-induced lupus
D	Systemic lupus erythematosis
E	Drug-induced photosensitivity

9276

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A	Mixed connective tissue disease
B	Flare of rheumatoid arthritis
C	Drug-induced lupus
D	Systemic lupus erythematosis
E	Drug-induced photosensitivity

Explanation

C	Drug-induced lupus

Sulfasalazine is a known drug-culprit of drug-induced lupus; this lady has a photosensitive rash with normal complement and negative anti-dsDNA antibodies. Features of drug-induced lupus include an average age of onset at 50–70 years, and equal male and female sex ratio. Anti-histone antibodies are positive in more patients with drug-induced lupus than systemic lupus erythematosus (SLE), and C3/C4 levels are normal, whereas complement levels may be decreased in SLE and anti-dsDNA levels are usually normal in drug-induced SLE. The commonest drugs associated with drug-induced lupus are hydralazine, procainamide, minocycline and quinidine, although captopril, sulfasalazine and a number of other drugs may be causative agents. Treatment involves removal of the offending agent; low-dose corticosteroids may speed recovery in patients who are slow to improve.

A	Mixed connective tissue disease

In order to make a diagnosis of mixed connective tissue disease, one needs a positive anti-RNP antibody.

B	Flare of rheumatoid arthritis

Photosensitive rashes are not a feature of rheumatoid arthritis.

D	Systemic lupus erythematosis

This lady has normal complement and negative anti-dsDNA antibodies and is on a medication that can cause drug-induced SLE, making the latter the likely diagnosis.

E	Drug-induced photosensitivity

Drug-induced lupus is the best fit description for this lady.

9276

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Responses Total:	51
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A 15-year-old boy presents with a 4-month history of fever, lethargy and a generalised macular rash, which comes and goes. Before the episode, he was well. He had no previous medical history or recent illness and there was no recent travel abroad. On examination, temperature was 38.5°C, blood pressure 125/75 mmHg, pulse of 100 bpm. The chest was clear and there were no heart murmurs on auscultation. A widespread non-blanching macular rash is seen over the chest and abdomen. There is swelling of the interphalangeal joints of both hands and feet with slight tenderness. Lymph nodes are palpable on the supraclavicular, axillary and inguinal regions. Examination of the abdomen also reveals a palpable mass on both right and left hypochondrium.

Investigations reveal:

Hb	13.5 g/dl
WCC	14.0 × 10^9/l
PLT	380 × 10^9/l
Na^+	145 mmol/l
K^+	4.8 mmol/l
Creatinine	89 μ mol/l
Rheumatoid factor	Negative
Antinuclear antibody (ANA)	Negative
Anti-dsDNA	Negative
Anti-streptolysin O (ASO) titre	Not detected
Electrocardiogram (ECG)	Sinus rhythm

What is the most likely underlying diagnosis from the choices listed below?

A	Acute rheumatic fever
B	Juvenile systemic lupus erythematosus
C	Pauciarticular Still's disease
D	Reiter's syndrome
E	Systemic Still's disease

9523

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A 15-year-old boy presents with a 4-month history of fever, lethargy and a generalised macular rash, which comes and goes. Before the episode, he was well. He had no previous medical history or recent illness and there was no recent travel abroad. On examination, temperature was 38.5°C, blood pressure 125/75 mmHg, pulse of 100 bpm. The chest was clear and there were no heart murmurs on auscultation. A widespread non-blanching macular rash is seen over the chest and abdomen. There is swelling of the interphalangeal joints of both hands and feet with slight tenderness. Lymph nodes are palpable on the supraclavicular, axillary and inguinal regions. Examination of the abdomen also reveals a palpable mass on both right and left hypochondrium.

Investigations reveal:

Hb	13.5 g/dl
WCC	14.0×10^9/l
PLT	380×10^9/l
Na^+	145 mmol/l
K^+	4.8 mmol/l
Creatinine	89 µmol/l
Rheumatoid factor	Negative
Antinuclear antibody (ANA)	Negative
Anti-dsDNA	Negative
Anti-streptolysin O (ASO) titre	Not detected
Electrocardiogram (ECG)	Sinus rhythm

What is the most likely underlying diagnosis from the choices listed below?

A	Acute rheumatic fever
B	Juvenile systemic lupus erythematosus
C	Pauciarticular Still's disease
D	Reiter's syndrome
E	Systemic Still's disease

Explanation

E Systemic Still's disease

Systemic Still's disease and other forms of juvenile rheumatoid arthritis (JRA) usually begin before the age of 16 years. There are different types of JRA with different presenting features. Systemic Still's is characterised by systemic features, high fever, rashes, generalised lymphadenopathy and splenomegaly with minor features of arthritis. Systemic features may precede the onset of arthritis. Rheumatoid factor and antinuclear antibodies are absent.

A Acute rheumatic fever

The history is too long, the ASO titre is negative and there are no features of carditis with a normal ECG and PR interval.

B Juvenile systemic lupus erythematosus

The antinuclear antibody is negative and there are significant systemic features (high fevers).

C Pauciarticular Still's disease

In pauciarticular Still's disease, antinuclear antibodies are present. Large joints are affected and most patients develop classic features of seronegative spondyloarthritis.

D Reiter's syndrome

The history is too long, there is no infective precipitant and the generalised lymphadenopathy and splenomegaly does not fit with reactive arthritis.

9523

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A 65-year-old Asian lady was referred to the Rheumatology Clinic with long-standing joint problems. She described initial involvement of the small joints of the hands, which resolved after a few weeks. Now the main joints involved are the wrists, elbows and knees. Before she migrated to the UK from Pakistan 2 years ago, she had suffered recurrent ear infections and a few episodes of nasal septum inflammation. On each episode she was treated with antibiotics and analgesia. She has a family history of systemic lupus erythematosus and she is on amlodipine for hypertension. On examination, the wrists and the knees are swollen and tender with reduced active and passive movement. The nose is saddle-shaped and the right upper ear cartilage is red and tender.

Investigations reveal:

Hb	9.5 g/l
WCC	11×10^9/l
ESR	86 mm/h
Na^+	146 mmol/l
K^+	3.8 mmol/l
Urea	4.6 mmol/l
Creatinine	120 µmol/l
Rheumatoid factor	Negative
Antinuclear antibody (ANA)	Negative
Urine dipstick	Negative

What is the most likely diagnosis?

A	Wegener's granulomatosis
B	Relapsing polychondritis
C	Mixed connective tissue disorder
D	Systemic sclerosis
E	Polymyalgia rheumatica

9524

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What is the most likely diagnosis?

A Wegener's granulomatosis

B Relapsing polychondritis

C Mixed connective tissue disorder

D Systemic sclerosis

E Polymyalgia rheumatica

Explanation

B Relapsing polychondritis

This lady has inflammation of the outer ear, nasal septum and relapsing remitting arthralgia/arthritis consistent with relapsing polychondritis. Relapsing polychondritis is a disorder that affects, cartilaginous and connective tissues causing episodic inflammation and destruction. Onset is typically in middle age and it occurs in equal frequency in men and women. The most common symptom is inflammation of the external ear and nasal cartilage. It is often associated with arthritis involving both small and large joints. Characteristic of the disease are bouts of inflammation that heal over weeks. Recurrent inflammation results in destruction of cartilaginous tissue resulting in floppy ears and a saddle nose. Biopsy of affected cartilaginous tissue will confirm the diagnosis.

A Wegener's granulomatosis

This lady has outer ear inflammation, ie of the cartilaginous pinna, and relapsing arthritis which are key differentiators from Wegener's granulomatosis (granulomatosis with polyangiitis). Although we are not given an ANCA result (expecting a cANCA with Wegener's), the renal function is normal and urine dipstick is inactive.

C Mixed connective tissue disorder

The ANA is negative and she has no features of connective tissue disease.

D Systemic sclerosis

In systemic sclerosis, ear and nose involvement is not common and Raynaud's is almost universal.

E Polymyalgia rheumatica

The lady has a negative ANA.

9524

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A 35-year-old Turkish man was referred to the Emergency Department by his GP with a suspected deep vein thrombosis (DVT). He recently returned to the UK after a 1-year break in Turkey. While away he was admitted once to hospital with diarrhoea and abdominal pain, which was accompanied by multiple painful lesions in his mouth. A few days after discharge from hospital, he presented again to the Emergency Department with an acute red and painful eye. He was sent home with eye drops for suspected conjunctivitis. A few months afterwards, the mouth lesions reappeared, but this time with similar lesions on his scrotum. At the same time his ankle and wrist joints were swollen and painful. The lesions resolved after a few weeks as well as the joint problems. He has no past medical history. On examination, he is pyrexial with a temperature of 38°C. The left calf is swollen and tender and there are several painful lesions on the extensor surface of both legs. The wrists and ankles are swollen and tender and there are two well-demarcated ulcers on the roof of his mouth that are tender to touch.

Investigations reveal:

Rheumatoid factor	Negative
Anti-nuclear antibody (ANA	Negative
Hb	8.8 g/dl
WCC	14×10^9/l
PLT	350×10^9/l
Na^+	140 mmol/l
K^+	4.8 mmol/l
Urea	8.8 mmol/l
Creatinine	98 µmol/l
Erythrocyte sedimentation rate (ESR)	120 mm/h
C-reactive protein (CRP)	210 g/l
Doppler ultrasound	Popliteal deep vein thrombosis (DVT)

What is the most likely underlying diagnosis?

A	Rheumatoid vasculitis
B	Sarcoidosis
C	Polyarteritis nodosa
D	Behçet's syndrome
E	Ulcerative colitis

9525

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A 35-year-old Turkish man was referred to the Emergency Department by his GP with a suspected deep vein thrombosis (DVT). He recently returned to the UK after a 1-year break in Turkey. While away he was admitted once to hospital with diarrhoea and abdominal pain, which was accompanied by multiple painful lesions in his mouth. A few days after discharge from hospital, he presented again to the Emergency Department with an acute red and painful eye. He was sent home with eye drops for suspected conjunctivitis. A few months afterwards, the mouth lesions reappeared, but this time with similar lesions on his scrotum. At the same time his ankle and wrist joints were swollen and painful. The lesions resolved after a few weeks as well as the joint problems. He has no past medical history. On examination, he is pyrexial with a temperature of 38°C. The left calf is swollen and tender and there are several painful lesions on the extensor surface of both legs. The wrists and ankles are swollen and tender and there are two well-demarcated ulcers on the roof of his mouth that are tender to touch.

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Doppler ultrasound	Popliteal deep vein thrombosis (DVT)

What is the most likely underlying diagnosis?

A Rheumatoid vasculitis

B Sarcoidosis

C Polyarteritis nodosa

D Behçet's syndrome

E Ulcerative colitis

Explanation

D Behçet's syndrome

This man has orogenital ulceration, likely uveitis, inflammation in his bowels, erythema nodosum and a DVT (unprovoked as the flight to Turkey is not long haul). Behçet's syndrome is characterised predominantly by inflammation of the small blood vessels leading to recurrent ulceration, especially in the oral and genital mucosa. It persists for many years with characteristic painful oral and genital ulcers, uveitis, seronegative arthritis, thrombophlebitis, DVT and erythema nodosum.

The incidence is higher in Mediterraneans and equally affects both sexes, but men have a more severe disease course. The most common presentation is painful oral aphthous ulcers that are often accompanied by genital ulcers. Arthritis is asymmetrical affecting large joints. Recurrent thrombophlebitis and DVT are also common. The pathergy sign is a useful diagnostic sign: this is characterised by the formation of a sterile pustule at venepuncture sites. Steroids and azathioprine are useful in the management of the disease. Infliximab, anti-TNF, may be used for more severe cases.

A Rheumatoid vasculitis

This patient is seronegative and has relapsing remitting arthritis with orogential ulceration

B Sarcoidosis

Sarcoidosis is not associated with orogenital ulcers or DVT.

C Polyarteritis nodosa

Polyarteritis nodosa is not associated with orogenital ulceration or erythema nodosum. The skin rash that may occur with polyarteritis nodosa is livedo reticularis.

E Ulcerative colitis

Genital ulceration is not common in ulcerative colitis, but may occur in Crohn's disease. Patients with Behcet's may have bloody diarrhoea, which may be clinically and histologically difficult to distinguish from inflammatory bowel disease.

9525

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Responses Total:	54
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A 45-year-old Asian woman presents with 3-month history of difficulty climbing stairs. She also described non-specific pain all over her joints, the lower legs and upper arms. She has been seeing her general practitioner for her symptoms, and several analgesics have been tried, but her symptoms are not improving. She is on insulin for diabetes and bendroflumethiazide for mild hypertension. On examination there is slight tenderness on the upper arms and the lower legs. Respiratory and cardiovascular examinations are normal.

Investigations reveal:

Hb	11 g/dl
WCC	6.6×10^9/l
PLT	200×10^9/l
Na^+	135 mmol/l
K^+	3.8 mmol/l
Creatinine	102 μ mol/l
Calcium	2.08 mmol/l
Phosphate	0.69 mmol/l
Creatinine kinase (CK)	200 U/l
Alkaline phosphatase (ALP)	150 mmol/l

X-ray of the lower legs shows coarsened trabecular bone, no fracture.

What diagnosis will you consider the most likely in her case?

A	Fibromyalgia
B	Polymyositis
C	Osteoarthritis
D	Osteoporosis
E	Osteomalacia

9526

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Calculator

Normal Values

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A 45-year-old Asian woman presents with 3-month history of difficulty climbing stairs. She also described non-specific pain all over her joints, the lower legs and upper arms. She has been seeing her general practitioner for her symptoms, and several analgesics have been tried, but her symptoms are not improving. She is on insulin for diabetes and bendroflumethiazide for mild hypertension. On examination there is slight tenderness on the upper arms and the lower legs. Respiratory and cardiovascular examinations are normal.

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What diagnosis will you consider the most likely in her case?

A Fibromyalgia

B Polymyositis

C Osteoarthritis

D Osteoporosis

E Osteomalacia

Explanation

E Osteomalacia

The patient has slightly low calcium, low phosphate and high ALP. Osteomalacia results from inadequate mineralisation of bone due to deficiency in vitamin D. Inadequate sunlight exposure (particularly in some Asian women who wear protective long clothing), in combination with dietary deficiency is often seen as a cause. Other causes of osteomalacia are chronic renal failure, renal osteodystrophy, malabsorption and renal tubular defects etc. Osteomalacia may result in symptoms such as skeletal pain and tenderness, proximal muscle weakness and spontaneous fractures. X-ray of long bone is often normal but may show defective mineralisation, with the characteristic 'Looser's zone' (pseudofractures). Biochemistry shows low calcium, phosphate, vitamin D levels and raised ALP.

A Fibromyalgia

The patient has an abnormal bone profile and does not have tenderness at multiple trigger points on examination. Fibromyalgia is a diagnosis of exclusion.

B Polymyositis

The patient's main symptoms are generalised bony pain, she has an abnormal bone profile and her CK is only mildly elevated. Osteomalacia can cause a proximal myopathy.

C Osteoarthritis

The patient's bone profile and her clinical features of generalised bone pain are suggestive of osteomalacia and she is too young for generalised osteoarthritis.

D Osteoporosis

Osteoporosis is associated with normal bone profile.

9526

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Responses Incorrect:	55
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A 32-year-old Nigerian woman presents to the Dermatology Clinic with 4 months' history of facial rash. It started at the bridge of the nose and slowly spread to the face. She has just returned from Nigeria and the rash flared up while she was there. The rash is non-itchy and not painful. She has tried various cosmetic products, but none have worked. She also complained that her hair has started falling out. She has no past medical history and is not on any medication. On examination she has a well-defined erythematous scaly rash, with an area of scarring over the face, ear and scalp. She has patchy hair loss over her scalp. Other examinations are completely normal.

Investigations reveal:

Hb	13.6 g/dl
WCC	5×10^9/l
PLT	150×10^9/l
Erythrocyte sedimentation rate (ESR)	50 mm/h
Na^+	136 mmol/l
Creatinine	98 μmol/l
Calcium	2.28 mmol/l
Anti-ds DNA	Not detected
Antinuclear antigen	Not detected

What the most likely diagnosis?

A	Lupus pernio
B	Dermatomyositis
C	Discoid lupus
D	Morphoea
E	Systemic lupus erythematosus (SLE)

9527

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A 32-year-old Nigerian woman presents to the Dermatology Clinic with 4 months' history of facial rash. It started at the bridge of the nose and slowly spread to the face. She has just returned from Nigeria and the rash flared up while she was there. The rash is non-itchy and not painful. She has tried various cosmetic products, but none have worked. She also complained that her hair has started falling out. She has no past medical history and is not on any medication. On examination she has a well-defined erythematous scaly rash, with an area of scarring over the face, ear and scalp. She has patchy hair loss over her scalp. Other examinations are completely normal.

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E	Systemic lupus erythematosus (SLE)

Explanation

C	Discoid lupus

This lady has a scaly rash localised to her face with scarring alopecia, with no systemic manifestations and negative antinuclear antigen and anti-dsDNA. Discoid lupus primarily affects the skin and is characterised by a well-demarcated macular rash with erythema, scales, plaques and atrophy. It is a variant of SLE, in which skin involvement is the main feature. It is more common in African–Caribbean women. Photosensitivity is a feature as well as scarring alopecia of the scalp. Very rarely patients may develop systemic features, but these are usually mild. Diagnosis is made by biopsy of the lesion.

A	Lupus pernio

Lupus pernio is a cutaneous form of sarcoidosis with dusky-purple infiltration of the nose.

B	Dermatomyositis

The facial rash of dermatomyositis is around the eyelids.

D	Morphoea

Morphoea is a localised form of scleroderma, characterised by dermal sclerosis with pigmentation. The skin appears thickened, rather than scaly.

E	Systemic lupus erythematosus (SLE)

This lady has a scaly rash localised to her face with scarring alopecia, with no systemic manifestations and negative antinuclear antigen and anti-dsDNA, making systemic lupus very unlikely.

9527

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A-40-year old man presents to the Emergency Department with digital ulceration and areas of gangrene affecting the fingers and toes. The problem started a few months back with insidious tingling, numbness and discoloration of his fingers associated with pain. Gradually the symptoms progressed with more severe discoloration and the appearance of ulcers on the tip of his fingers associated with a constant burning sensation. He noticed that on walking he would experience severe pain in the instep of his foot and the calves. There is no history of angina or exertional dyspnoea. He is a heavy smoker, but has no medical history. Examination revealed cold hands and feet with extensive cyanosis, ulceration and gangrene of the fingers and toes. There are absent pulses in the radial, dorsalis pedis and posterior tibia arteries.

Investigations revealed:

Hb	12.6 g/dl
WCC	12×10^9/l
PLT	240×10^9/l
Na^+	135 mmol/l
Creatinine	80 μ mol/l
Erythrocyte sedimentation rate (ESR)	20 mm/h
Rheumatoid factor	Negative
Antinuclear antibody	Absent

What is the underlying diagnosis?

A	Takayasu's arteritis
B	Disseminated atherosclerosis
C	Systemic sclerosis
D	Buerger's disease
E	Acrocyanosis

9528

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Normal Values

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What is the underlying diagnosis?

A Takayasu's arteritis

B Disseminated atherosclerosis

C Systemic sclerosis

D Buerger's disease

E Acrocyanosis

Explanation

D Buerger's disease

This heavy smoker has critical digital ischaemia with absent pulses and negative autoantibodies. Thrombangiitis obliterans (Buerger's disease) is a disease of small and medium-sized arteries and veins resulting in inflammation and ulceration. There is no excessive atheroma and it does not involve the coronary arteries like atherosclerosis. The disease occurs mainly in cigarette smokers. The patient presents with symptoms of arterial ischaemia. Migratory phlebitis in the superficial vein is present in 40% of cases. The disease progresses proximally, resulting in gangrene of the digits. Diagnosis is usually clinical. Arteriogram is also of benefit and will show occlusion of distal arteries of the hands and feet. Treatment is supportive and patients should stop smoking.

A Takayasu's arteritis

There is no constitutional upset, or signs of large vessel and aortic involvement, inflammatory markers are normal and Takayasu's usually occurs in females.

B Disseminated atherosclerosis

There is no history of angina or exertional dyspnoea.

C Systemic sclerosis

The patient has negative autoantibodies and has no other features of systemic sclerosis.

E Acrocyanosis

Acrocyanosis is persistent blue or cyanotic discoloration of the extremities, most commonly occurring in the hands, although it also occurs in the feet and distal parts of face. Acrocyanosis is not painful, nor is it associated with digital ulceration.

9528

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A 28-year-old Caucasian male presented with 2-week history of fever and chills followed by a widespread papular rash over his body. One week ago he noticed that his wrist and ankle were swollen and tender. The inflammation resolved a few days later but now his right knee is very swollen and tender, and he can barely weight-bear on it.

He works as a computer salesman and he was in Thailand until 2 weeks ago on a business trip. On examination, his right knee is hot and swollen and there are a few pustular lesions on his trunk.

Investigations reveal:

Haemoglobin (Hb)	13.6 g/dl
White cell count (WCC)	13 × 10^9/l
Sodium	145 mmol/l
Potassium	4.5 mmol/l
Creatinine	88 µmol/l
Rheumatoid factor	Negative
Antinuclear antibody	Absent
Synovial fluid white cells	>20 000/µl

What is the probable diagnosis?

A	Acute gout
B	Reactive arthritis
C	Gonococcal arthritis
D	Tuberculous arthritis
E	Pseudogout

9529

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Calculator

Normal Values

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A	Acute gout
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C	Gonococcal arthritis
D	Tuberculous arthritis
E	Pseudogout

Explanation

Gonococcal arthritis is characterised by dermatitis-polyarthritis-tenosynovitis syndrome. It is the most common cause of acute infective arthritis in sexually active adults. It spread from the infected mucosal surface to the joints. Fever, rashes, and migratory arthritis is the main presenting feature.
Diagnosis is made by culture of synovial fluid, skin lesions, and specimen from urethral swab.

Acute gout presents as a monoarthritis, usually in individuals who have risk factors for gout, for example obesity and the metabolic syndrome. The skin lesions here do not fit with gout. Pseudogout similarly presents as a monoarthritis without the rash seen here. Reactive arthritis presents with the triad of conjunctivitis, urethritis and arthritis, the clear presence of bacterial infection on joint aspiration here would count against it. TB arthritis usually presents in a patient with a history of chest symptoms suggestive of the underlying diagnosis.

9529

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A 42-year-old man presents to the Rheumatology Clinic for review. He complains of multiple joint pains, particularly affecting his back, wrists, ankles and feet, with clear distal interphalangeal joint involvement. On examination he has psoriatic patches on his elbows. There is onycholysis, transverse ridging and pitting on examination of his nails. DIP swelling, pain and restricted movement is noted. He is started on and methotrexate but on return to the clinic there is no improvement. You elect to treat him with adalimumab.

The mode of action of adalimumab is mediated through which of the following?

A	C-reactive protein (CRP)
B	Erythrocyte sedimentation rate (ESR)
C	IL-23
D	TNF-α
E	IL-12

18520

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Calculator

Normal Values

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C	IL-23
D	TNF-α
E	IL-12

Explanation

D	TNF-α

Adalimumab is anti-TNF-α monoclonal antibody. Adalimumab, etanercept and infliximab are anti-TNF agents which show some degree of efficacy as second-line agents in the management of psoriasis and psoriatic arthritis. TNF-α is thought to play an important role as a cytokine leading to worsening of joint inflammation and destruction.

A	C-reactive protein (CRP)

While CRP and ESR may well fall in response to anti-TNF therapy, they are more non-specific markers of inflammation.

B	Erythrocyte sedimentation rate (ESR)

While CRP and ESR may well fall in response to anti-TNF therapy, they are more non-specific markers of inflammation.

C	IL-23

Ustekinumab has recently been approved by NICE for the treatment of psoriasis and psoriatic arthritis, and is an IL-12/23 antagonist.

E	IL-12

Ustekinumab has recently been approved by NICE for the treatment of psoriasis and psoriatic arthritis, and is an IL-12/23 antagonist.

18520

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You review a 62-year-old man in the Cardiology Clinic, some 6 weeks after his admission for acute myocardial infarction. He was commenced on lipid-lowering therapy with simvastatin after his myocardial infarction, in addition to other medications including ramipril 10 mg daily and aspirin 75 mg, which he has taken for several years. Since his myocardial infarction he has been increasing his exercise, but is complaining of pains in the joints and muscles, general malaise and a skin rash.

Blood testing reveals:

Anti ds-DNA antibodies	Positive
Anti-histone antibodies	Positive
C3/C4 levels	Normal

You suspect a diagnosis of lupus.

Which of the following represents the most appropriate course of action?

A	Withdraw his ramipril
B	Withdraw his simvastatin
C	Withdraw his aspirin
D	Start prednisolone 30mg PO daily for 6 weeks
E	Observe for resolution of symptoms over time

18559

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Calculator

Normal Values

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C	Withdraw his aspirin
D	Start prednisolone 30mg PO daily for 6 weeks
E	Observe for resolution of symptoms over time

Explanation

B	Withdraw his simvastatin

This man has just been started on many medications and has positive anti-histone antibodies. There is a suspicion that this man has drug-induced lupus. Generally symptoms are said to appear some 3 weeks to 2 years after the onset of therapy, making his simvastatin the most likely culprit in this case. Drug-induced lupus is said to affect the 50–70 year age group most commonly, has a male:female ratio of 1:1 and affects Caucasians more commonly than other populations. Skin rash is seen in around 25% of sufferers, joint pains and malaise are more common, and Raynaud's is seen in around 25%. Anti-histone antibodies are more likely to be positive in drug-induced lupus versus non-drug-induced lupus; anti-ds DNA antibodies are less likely to be positive. C3/C4 levels are usually normal. Drugs which may directly cause lupus include simvastatin, captopril, valproate, penicillamine, carbamazepine, methyldopa, procainamide, minocycline, griseofulvin and a host of other agents. Treatment is withdrawal of the offending medication, with rapid clinical resolution normally apparent.

A	Withdraw his ramipril

Ramipril does not commonly cause a drug-induced lupus.

C	Withdraw his aspirin

Aspirin is not commonly associated with drug-induced lupus.

D	Start prednisolone 30mg PO daily for 6 weeks

The patient's symptoms are likely to resolve with withdrawal of the culprit drug, without the need for such high-dose steroids.

E	Observe for resolution of symptoms over time

The patient's symptoms are likely to continue if the offending drug is continued.

18559

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Responses Total:	60
Responses - % Correct:	0%

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A 67-year-old man with a previous history of acute gout and mild renal impairment comes to the clinic complaining of an acute flare. He has hypertension for which he takes amlodipine 5 mg daily and mild renal impairment is again confirmed. His current medication for gout is allopurinol 100 mg per day and colchicine 500 μg daily.

Investigations:

Hb	11.8 g/dl
WCC	5.4 $x10^9$/l
PLT	202 $x10^9$/l
Na^+	139 mmol/l
K^+	5.0 mmol/l
Creatinine	157 mol/l

Which of the following represents the most appropriate management for him?

A	Increase his colchicine to cope with the exacerbation
B	Halve the dose of his allopurinol
C	Give him a course of prednisolone 30mg daily for 1 week
D	Increase his allopurinol
E	Add diclofenac to his regime

20572

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Calculator

Normal Values

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B Halve the dose of his allopurinol

C Give him a course of prednisolone 30mg daily for 1 week

D Increase his allopurinol

E Add diclofenac to his regime

Explanation

A Increase his colchicine to cope with the exacerbation

Increasing his colchicine should be sufficient to get on top of his acute exacerbation.

B Halve the dose of his allopurinol

Halving his allopurinol as the only intervention is unlikely to be helpful in the short term.

C Give him a course of prednisolone 30mg daily for 1 week

A short course of corticosteroids is a possibility if he fails to respond to the increased dose of colchicine.

D Increase his allopurinol

Increasing his allopurinol may make matters worse, as allopurinol can trigger a worsening of gout and should not be started in an acute attack, nor should the dose be increased in an acute attack.

E Add diclofenac to his regime

Adding diclofenac may worsen both his renal function and blood pressure and should be avoided in this case.

20572

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Session Progress

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Responses Incorrect:	61
Responses Total:	61
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A 54-year-old man comes to the clinic. He is concerned as he plays the piano in a local hotel and is not able to manage this at the moment. On further questioning he admits to 2 hours of morning stiffness, and pain affecting the hips, knees and elbows. On examination he has nodules over his elbows and pain over the PIP joints of the fingers.

Investigations:

Hb	11.9 g/dl
WCC	5.4×10^9/l
PLT	201×10^9/l
Na^+	140 mmol/l
K^+	4.8 mmol/l
Creatinine	100 mol/l
Erythrocyte sedimentation rate (ESR)	45 mm/hr

Which of the following represents the most appropriate initial therapy in this man with respect to his long term ability to play the piano?

A	Diclofenac 50 mg tds
B	Prednisolone 20 mg PO
C	Splinting of his fingers
D	Surgical tendon release
E	Joint fusion

20592

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Calculator

Normal Values

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A 54-year-old man comes to the clinic. He is concerned as he plays the piano in a local hotel and is not able to manage this at the moment. On further questioning he admits to 2 hours of morning stiffness, and pain affecting the hips, knees and elbows. On examination he has nodules over his elbows and pain over the PIP joints of the fingers.

Investigations:

Hb	11.9 g/dl
WCC	5.4×10^9/l
PLT	201×10^9/l
Na^+	140 mmol/l
K^+	4.8 mmol/l
Creatinine	100 mol/l
Erythrocyte sedimentation rate (ESR)	45 mm/hr

Which of the following represents the most appropriate initial therapy in this man with respect to his long term ability to play the piano?

A	Diclofenac 50 mg tds
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C	Splinting of his fingers
D	Surgical tendon release
E	Joint fusion

Explanation

B	Prednisolone 20 mg PO

This man is likely to have seropositive rheumatoid arthritis (RF positive, as he has nodules) and needs early intensive intervention to reduce joint damage and disability, to allow him to maintain function. Steroids should be started concomittently with DMARDs, such as methotrexate. Steroids have a rapid onset of action and bridge the gap before methotrexate exerts its effects (up to 12 weeks).

A	Diclofenac 50 mg tds

Although he may gain some symptomatic relief from diclofenac, it does not have any disease modification and therefore does little to reduce joint damage.

C	Splinting of his fingers

Although he does need to rest his fingers while the inflammation is controlled, splinting will not significantly reduce pain or inflammation or damage.

D	Surgical tendon release

We are told that this man plays the piano, and as such surgical tendon release would be best avoided if possible due to the period of time involved in recovery.

E	Joint fusion

We are told that this man plays the piano, and as such joint fusion would be best avoided if possible due to the period of time involved in recovery.

20592

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Responses Correct:	0
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Responses Total:	62
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A 37-year-old woman presents with tiredness, anorexia, gradual weight loss and intermittent pleuritic chest pain. She also complains of a sunburn-type rash which affects the bridge of her nose and cheeks, particularly in the summer months and joint pains affecting the wrists, knees and ankles. On examination her blood pressure is 148/92 mmHg. She has a rash on her face.

Investigations:

Hb	10.3 g/dl (normochromic normocytic)
WCC	4.1 $\times 10^9$/l
PLT	92 $\times 10^9$/l
APTT	44 s
C-reactive protein (CRP)	61 mg/l
Na^+	141 mmol/l
K^+	5.0 mmol/l
Creatinine	142 µ mol/l
Urine	Blood +, protein ++

Which of the following is the most specific investigation to elucidate the underlying diagnosis?

A	Anti-nuclear antibodies
B	Anti-ds DNA antibodies
C	Anti-histone antibodies
D	C3 levels
E	C4 levels

20955

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Calculator

Normal Values

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A 37-year-old woman presents with tiredness, anorexia, gradual weight loss and intermittent pleuritic chest pain. She also complains of a sunburn-type rash which affects the bridge of her nose and cheeks, particularly in the summer months and joint pains affecting the wrists, knees and ankles. On examination her blood pressure is 148/92 mmHg. She has a rash on her face.

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Which of the following is the most specific investigation to elucidate the underlying diagnosis?

A	Anti-nuclear antibodies
B	Anti-ds DNA antibodies
C	Anti-histone antibodies
D	C3 levels
E	C4 levels

Explanation

B Anti-ds DNA antibodies

Anti-ds DNA antibodies are 100% specific for systemic lupus erythematosus (SLE), and their level may correlate with lupus activity, however only 50–70% SLE patients have these antibodies. Anti-dsDNA antibodies also indicate a worse prognosis, with renal/neurological involvement.

A Anti-nuclear antibodies

Anti-nuclear antibodies have sensitivity of over 95% for lupus, but are not very specific. 10% of the asymptomatic healthy, normal population are positive for anti-nuclear antibodies.

C Anti-histone antibodies

Anti-histone antibodies are more consistent with drug-induced lupus.

D C3 levels

Complement may be low in SLE; this is non-specific and this phenomenon is also observed in other conditions such as subacute bacterial endocarditis.

E C4 levels

Complement may be low in SLE; this is non-specific and this phenomenon is also observed in other conditions such as subacute bacterial endocarditis

20955

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Session Progress

Responses Correct:	0
Responses Incorrect:	63
Responses Total:	63
Responses - % Correct:	0%

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A 60-year-old woman who is being treated with methotrexate for rheumatoid arthritis has misunderstood the directions for therapy and presents to the surgery with glossitis, severe mouth ulcers and megaloblastic anaemia. On further questioning it transpires she has been taking a dose of 40mg per week rather than 10mg per week.

Investigations:

Hb	9.8 g/dl
MCV	107 fl
WCC	2.3×10^9/l
PLT	95×10^9/l

Which of the following is the most appropriate rescue medication?

A	B12
B	Folinic acid
C	Multivitamins
D	Iron Sulphate
E	Niacin

21008

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Calculator

Normal Values

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Which of the following is the most appropriate rescue medication?

A	B12
B	Folinic acid
C	Multivitamins
D	Iron Sulphate
E	Niacin

Explanation

B	Folinic acid

Unfortunately medication errors with respect to rheumatoid arthritis are not uncommon. Patients occasionally find it difficult to understand that they must take their medication weekly as opposed to daily. Calcium folinate is a potent antagonist for the effects of methotrexate on the haematopoietic system, given by IV infusion at doses up to 75 mg in the first 12 hours. This can then be followed by doses of 6–12 mg every 4 hours. Blood transfusion may also be required in exceptional circumstances. Where massive overdose of methotrexate has occurred, hydration and urinary alkalinisation may be an option. Standard dialysis is ineffective in removing methotrexate, although intermittent high-flux dialysis may be of value.

A	B12

Methotrexate is a folate antagonist, and therefore administering vitamin B12 will not be of any benefit.

C	Multivitamins

Methotrexate is a folate antagonist, and while there may be some folic acid added to multivitamins, this is insufficient in methotrexate toxicity.

D	Iron Sulphate

Methotrexate is a folate antagonist, and therefore administering iron will not be of any benefit.

E	Niacin

Methotrexate is a folate antagonist, and therefore administering niacin will not be of any benefit.

21008

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Responses Correct:	0
Responses Incorrect:	64
Responses Total:	64
Responses - % Correct:	0%

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A 52-year-old woman presents to the Respiratory Clinic with increased shortness of breath. She has suffered from Raynaud's syndrome for some time, and around 6–9 months ago began treatment for gastro-oesophageal reflux. Other past history of note includes smoking of 10 cigarettes per day. On examination her blood pressure is 152/92 mmHg, with a pulse of 83 bpm. Auscultation of the chest reveals fine inspiratory crackles throughout both lung fields.

Investigations:

Hb	10.9 g/dl
WCC	5.9×10^9/l
PLT	135×10^9/l
Na^+	141 mmol/l
K^+	4.9 mmol/l
Creatinine	142 µmol/l
FEV_1	2.1
FVC	2.3
Adjusted KCO	Low

Which of the following is the most likely diagnosis?

A	Asthma
B	Chronic obstructive pulmonary disease (COPD)
C	Systemic sclerosis
D	Systemic lupus erythematosus (SLE)
E	Idiopathic pulmonary fibrosis

21012

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Calculator

Normal Values

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A 52-year-old woman presents to the Respiratory Clinic with increased shortness of breath. She has suffered from Raynaud's syndrome for some time, and around 6–9 months ago began treatment for gastro-oesophageal reflux. Other past history of note includes smoking of 10 cigarettes per day. On examination her blood pressure is 152/92 mmHg, with a pulse of 83 bpm. Auscultation of the chest reveals fine inspiratory crackles throughout both lung fields.

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K^+	4.9 mmol/l
Creatinine	142 µmol/l
FEV_1	2.1
FVC	2.3
Adjusted KCO	Low

Which of the following is the most likely diagnosis?

Your answer was incorrect

A Asthma

B Chronic obstructive pulmonary disease (COPD)

C Systemic sclerosis

D Systemic lupus erythematosus (SLE)

E Idiopathic pulmonary fibrosis

Explanation

C Systemic sclerosis

An obstructive spirometry pattern would be found and the extrapulmonary features are not associated with COPD.

E Idiopathic pulmonary fibrosis

The most striking feature dissuading you from the diagnosis of idiopathic pulmonary fibrosis is Raynaud's phenomenon, which is strongly linked to connective tissue disease.

A Asthma

The constellation of symptoms and signs seen here, with Raynaud's, gastro-oesophageal reflux disease, dyspnoea and a restrictive pattern of spirometry, is highly suggestive of systemic sclerosis with pulmonary fibrosis. Antinuclear antibody testing is usually positive, high-resolution CT scanning reveals changes characteristic of interstitial lung disease: pulmonary fibrosis. Calcium channel blockers, prostaglandins and cyclophosphamide have all been used in the treatment of systemic sclerosis related lung disease, and PDE-5 inhibitors are now used extensively for control of pulmonary hypertension.

B Chronic obstructive pulmonary disease (COPD)

One would expect an obstructive pattern of spirometry, and onset of asthma at this age would be unusual. Polyphonic wheezes are more likely to be heard, as crackles may signify infection.

D Systemic lupus erythematosus (SLE)

Although the features could be consistent with SLE, the absence of any rashes or cytopaenias make SLE less likely than systemic sclerosis.

21012

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Responses Total:	65
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A 72-year-old man presents for revision of his left hip replacement some 10 years after his first prosthesis. Apart from some dull ache in the joint he has suffered no particular problems over the past few years. He is otherwise completely well, on examination his blood pressure is 142/80 mmHg, he is apyrexial.

Investigations:

Hb	12.1 g/dl
WCC	5.6×10^9/l
PLT	190×10^9/l
Na^+	140 mmol/l
K^+	4.8 mmol/l
Creatinine	100 μ mol/l
Joint aspirate	Gram positive bacillus

Which of the following is the most likely organism to have been aspirated from the joint?

A	*Bacillus anthracis*
B	*Clostridium difficile*
C	*Clostridium perfringens*
D	*Propionibacterium acnes*
E	*Cornyebacterium striatum*

21169

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Calculator

Normal Values

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C *Clostridium perfringens*

D *Propionibacterium acnes*

E *Cornyebacterium striatum*

Explanation

D *Propionibacterium acnes*

Propionibacterium acnes (1) is a slow growing Gram-positive bacterium which is poorly virulent. Symptoms of *P. acnes* infection may occur many years after original arthroplasty and the bacteria are only identified at the time of joint revision. Prolonged intravenous antibiotics given at the time of revision arthroplasty are said to resolve infection in around 90% of cases. *P. acnes* is known to be sensitive to penicillins, clindamycin and carbapenems.

A *Bacillus anthracis*

Bacillus anthracis is extremely rare. In humans, anthrax usually takes a cutaneous form with necrotic black lesions.

B *Clostridium difficile*

Clostridium difficile is most likely to be associated with antibiotic-associated diarrhoea and pseudomembranous colitis.

C *Clostridium perfringens*

This is associated with gas gangrene, bacteraemia, tissue necrosis, emphysematous cholecystitis

E *Cornyebacterium striatum*

While *Cornyebacterium striatum* is an occasional cause of prosthetic joint infection, *P. acnes* is more commonly found.

Zeller V, Ghorbani A, Strady C, Leonard P, Mamoudy P, Desplaces N. *Propionibacterium acnes*: an agent of prosthetic joint infection and colonization. Journal of Infection, 55, 119–124.

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A 64-year-old man who has a history of type 2 diabetes, ischaemic heart disease and atrial fibrillation presents to the Emergency Room with acute gout. Medication of note includes ramipril, furosemide, digoxin, atorvastatin and insulin. He is also warfarinised. On examination his blood pressure is 142/82 mmHg, his pulse is 78 bpm in atrial fibrillation. He has obvious gout affecting his right ankle.

Investigations:

Hb	11.0 g/dl
WCC	6.7×10^9/l
PLT	220×10^9/l
Na^+	138 mmol/l
K^+	4.9 mmol/l
Creatinine	185 mol/l
Estimated glomerular filtration rate (eGFR)	20

Which of the following therapies for gout would be the best choice taking into account he is warfarinsed, although it may not currently be licensed for all forms of acute gout?

A	Colchicine
B	Allopurinol
C	Prednisolone
D	Naproxen
E	Intrarticular steroid injection

21235

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Calculator

Normal Values

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A 64-year-old man who has a history of type 2 diabetes, ischaemic heart disease and atrial fibrillation presents to the Emergency Room with acute gout. Medication of note includes ramipril, furosemide, digoxin, atorvastatin and insulin. He is also warfarinised. On examination his blood pressure is 142/82 mmHg, his pulse is 78 bpm in atrial fibrillation. He has obvious gout affecting his right ankle.

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A Colchicine

B Allopurinol

C Prednisolone

D Naproxen

E Intrarticular steroid injection

Explanation

E Intrarticular steroid injection

This is the best option, provided infection has been excluded, as a localised steroid injection into the affected joint will alleviate the symptoms from the acute attack and not upset the renal function or glycaemic control.

A Colchicine

There is some evidence that colchicine increases the INR and his eGFR is less than 30, therefore colchicine is ideally best avoided, if possible even at a 500 µg bd dosage.

B Allopurinol

Allopurinol should not be started in the acute attack of gout and can worsen the acute episode. Furthermore his renal function is very poor.

C Prednisolone

Although systemic steroids (prednisolone) will be effective and will not worsen his renal function directly, it might worsen his glucose control.

D Naproxen

NSAIDs should not be used with this degree of renal impairment.

21235

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A 67-year-old woman with long-standing erosive rheumatoid arthritis is referred by her GP for further management. She has bilateral lower limb swelling and difficult to manage hypertension. Current medication includes low dose corticosteroids, methotrexate, ramipril, aspirin and atorvastatin. On examination her blood pressure is 149/82 mmHg, pulse is 78 bpm regular. She has bilateral pitting oedema but her chest is clear. There is hepatomegaly on abdominal examination.

Investigations:

Hb	11.0 g/dl
WCC	7.8×10^9/l
PLT	190×10^9/l
Na^+	139 mmol/l
K^+	4.9 mmol/l
Creatinine	199 µ mol/l
Erythrocyte sedimentation rate (ESR)	44 mm/hr
Alanine aminotransferase (ALT)	54 U/l
Alkaline phosphatase	189 U/l
24-hour urinary protein	3.1g

Which of the following is the most likely diagnosis?

A	Systemic inflammatory amyloidosis
B	Methotrexate toxicity
C	Rheumatoid vasculitis
D	Minimal change disease
E	Systemic lupus erythematosus (SLE)

21238

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Calculator

Normal Values

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Which of the following is the most likely diagnosis?

A Systemic inflammatory amyloidosis

B Methotrexate toxicity

C Rheumatoid vasculitis

D Minimal change disease

E Systemic lupus erythematosus (SLE)

Explanation

A Systemic inflammatory amyloidosis

The hepatomegaly, heavy proteinuria with raised alkaline phosphatase is a strong indicator towards amyloid infiltration. Secondary inflammatory amyloidosis occurs due to increased circulating levels of serum amyloid A, which is an acute phase reactant. The raised ESR seen here is an indication of ongoing inflammation related to her rheumatoid disease. While colchicine is of value in reducing amyloid deposition in familial Mediterranean fever, there is no evidence it has a positive effect in amyloidosis related to underlying systemic inflammation. Treatment should focus on intensive control of the underlying cause; her rheumatoid disease.

B Methotrexate toxicity

Methotrexate toxicity can cause myelosuppression (but her FBC is fine) and hepatotoxicity (her ALT is only mildly elevated). It is not associated with hepatomegaly or nephrotic syndrome. Rheumatoid arthritis drugs that may cause nephrotic syndrome include penicillamine and gold.

C Rheumatoid vasculitis

Rheumatoid vasculitis very rarely affects the kidneys, but usually causes cutaneous (purpuric rashes) and neurological (mononeuritis multiplex) manifestations.

D Minimal change disease

Although minimal change disease might explain her nephrotic syndrome, it would not explain hepatomegaly.

E Systemic lupus erythematosus (SLE)

This lady has known rheumatoid arthritis and therefore is unlikely to then develop an entirely different disease later. The key to knowing that she did not have an arthritis as part of SLE that evolved later on, is the finding that she had erosions, which are strongly suggestive that the original diagnosis of rheumatoid arthritis was correct.

21238

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Responses Correct:	0
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Responses Total:	68
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A 60-year-old man presents with variable dysphagia, first to liquids, then to solids, then either intermittently. He has no other significant past medical history, but has been feeling rather fatigued over the past few months and has asked to be transferred from his manual job at the local warehouse, to a computer-based alternative. On examination he has a purple/red rash on his face. He finds it difficult to get up out of the chair, but says that this is because he is tired after walking to outpatients from the main hospital car park. His blood pressure is 145/82 mmHg and his BMI is 31; there are no other abnormal findings on clinical examination.

Investigations:

Hb	12.1 g/dl
WCC	7.2 $x10^9$/l
PLT	201 $x10^9$/l
Na^+	141 mmol/l
K^+	4.6 mmol/l
Creatinine	130 µ mol/l
Antinuclear antibody (ANA)	Positive

Which of the following is the most likely diagnosis?

A	Polymyositis
B	Oesophageal cancer
C	Scleroderma
D	Systemic lupus erythematosus (SLE)
E	Dermatomyositis

21476

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Calculator

Normal Values

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A	Polymyositis
B	Oesophageal cancer
C	Scleroderma
D	Systemic lupus erythematosus (SLE)
E	Dermatomyositis

Explanation

E Dermatomyositis

This patient has muscle weakness, dysphagia (due to muscle weakness) and facial rash. The ANA may be positive (40–80% of cases). Approximately 20% of patients have myositis-specific autoantibodies (such as anti-Jo 1 antibodies). The creatine kinase (CK) is usually elevated, as may alanine aminotransferase (ALT) (may be muscle not liver). Skin and muscle biopsies are diagnostic.

A Polymyositis

The facial rash makes the diagnosis derm (skin)-atomyositis. This is a very important learning point – essentially polymyositis is clinically almost identical to dermatomyositis, but there is no rash.

B Oesophageal cancer

The intermittent nature of the symptoms seen here goes against oesophageal carcinoma, as does the absence of weight loss; these aspects with the initial dysphagia to liquids make the diagnosis unlikely.

C Scleroderma

Scleroderma is unlikely because he does not have Raynaud's or skin thickening and the myopathy should make you think of dermatomyositis/polymyositis. Dysphagia in scleroderma is due to osephageal dysmotility.

D Systemic lupus erythematosus (SLE)

The facial rash might point us towards either SLE or dermatomyositis, but the proximal myopathy seen when he tries to get out of a chair points us more towards the latter diagnosis.

21476

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Responses Total:	69
Responses - % Correct:	0%

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A 59-year-old man presents with an acute pain and effusion in his right knee. He is on haemodialysis for chronic renal failure related to type 1 diabetes and takes a number of medications including vitamin D and cinacalcet. On examination his blood pressure is 155/89 mmHg, his pulse is 80 bpm regular, his temperature is 37.6°C. He does not appear to be fluid overloaded. He has psoriatic plaques on knees and elbows.

Investigations:

Hb	10.4 g/dl
WCC	6.7×10^9/l
PLT	179×10^9/l
Na^+	140 mmol/l
K^+	4.5 mmol/l
Ca^{2+}	2.15 mmol/l
Creatinine	540 mol/l (pre-dialysis)
Knee effusion	Neutrophils and rhomboid crystals identified, weakly positively birefringent

Which of the following is the most likely diagnosis?

A	Gout
B	Hydroxyapatite arthritis
C	Pseudogout
D	Psoriatic arthritis
E	Osteoarthritis

21486

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Calculator

Normal Values

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WCC	6.7 × 10^9/l
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Which of the following is the most likely diagnosis?

A	Gout
B	Hydroxyapatite arthritis
C	Pseudogout
D	Psoriatic arthritis
E	Osteoarthritis

Explanation

C	Pseudogout

This man has end-stage renal failure and hyperparathyroidism, as evidenced by his cinacalcet prescription, and his low normal calcium. Hyperparathyroidism is associated with pseudogout (chondrocalcinosis) which may present acutely as an oligoarthritis, similar to gout, in shoulders, elbows or ankles or knees. Diagnosis is based on negative culture, and non- or weakly positively birefringent rhomboid or rod shaped crystals. NSAIDs are used in patients without renal dysfunction, but may worsen salt and water retention and blood pressure in this patient, so colchicine may be a more appropriate choice.

A	Gout

Gouty crystals are needle shaped and negatively birefringent.

B	Hydroxyapatite arthritis

Hydroxyapatite crystals are associated with a very destructive type of arthritis, usually in the shoulders of elderly women; heavily blood stained fluid is usually found.

D	Psoriatic arthritis

Although this patient has psoriasis, the presence of crystals in the synovial fluid make a crystal arthritis far more likely.

E	Osteoarthritis

The history is too acute for osteoarthritis and the synovial fluid findings crystalize the diagnosis of pseudogout.

21486

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Session Progress

Responses Correct:	0
Responses Incorrect:	70
Responses Total:	70
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A 44-year-old man presents with gout. He has a history of obesity, type 2 diabetes, a previous myocardial infarction some 4 years earlier and subsequent ischaemic cardiomyopathy. He also has congestive heart failure which is managed with ramipril and furosemide. On examination his blood pressure is 135/80 mmHg, his pulse is 78 bpm and regular. He has mild bibasal crackles and bilateral pitting oedema of both ankles, and gout affecting his right great toe.

Investigations:

Hb	11.5 g/dl
WCC	4.5×10^9/l
PLT	190×10^9/l
Na^+	139 mmol/l
K^+	4.5 mmol/l
Creatinine	130 μmol/l
Urate	0.64 mmol/l (0.23-0.46)

Which of the following is the most appropriate treatment for his acute gout?

A	Rasburicase
B	Ibuprofen
C	Colchicine
D	Allopurinol
E	Prednisolone

21505

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Calculator

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A 44-year-old man presents with gout. He has a history of obesity, type 2 diabetes, a previous myocardial infarction some 4 years earlier and subsequent ischaemic cardiomyopathy. He also has congestive heart failure which is managed with ramipril and furosemide. On examination his blood pressure is 135/80 mmHg, his pulse is 78 bpm and regular. He has mild bibasal crackles and bilateral pitting oedema of both ankles, and gout affecting his right great toe.

Investigations:

Hb	11.5 g/dl
WCC	4.5×10^9/l
PLT	190×10^9/l
Na^+	139 mmol/l
K^+	4.5 mmol/l
Creatinine	130 μmol/l
Urate	0.64 mmol/l (0.23-0.46)

Which of the following is the most appropriate treatment for his acute gout?

A Rasburicase

B Ibuprofen

C Colchicine

D Allopurinol

E Prednisolone

Explanation

C Colchicine

Colchicine is the best fit here, and could be used at a lower 'renal' dose of 500 μg bd.

A Rasburicase

While rasburicase accelerates the metabolism of uric acid and is useful in preventing and treating hyperuricaemia associated with tumour lysis syndrome, it is not currently licensed for the treatment of acute gout associated with other conditions.

B Ibuprofen

Ibuprofen is appropriate for the majority of patients with acute gout, but it may precipitate sodium and water retention and as such is not appropriate in this case, and could worsen creatinine.

D Allopurinol

Allopurinol may worsen the acute attack.

E Prednisolone

Prednisolone is also responsible for sodium and water retention and may worsen his glucose control.

21505

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Session Progress

Responses Correct:	0
Responses Incorrect:	71
Responses Total:	71
Responses - % Correct:	0%

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A 48-year-old woman presents with symptoms of parotid swelling, and dry eyes. She also avoids eating dry foods like cheese biscuits because her mouth is dry, and that she has recently had to have her plate from her dental implant refitted because it is rubbing on her gums. Other history of note is treatment for oral candidiasis 3 months ago. On examination her blood pressure is 145/82 mmHg, she has blepharitis and bilateral parotid enlargement.

Investigations:

Hb	12.1 g/dl
WCC	7.1×10^9/l
PLT	182×10^9/l
Na^+	141 mmol/l
K^+	4.3 mmol/l
Creatinine	135 mol/l
Rheumatoid factor	weakly positive

Given the suspected diagnosis, which investigation would be most likely to confirm this?

A	Antinuclear antibodies
B	Anti-Ro and Anti-La antibodies
C	Serum protein electrophoresis
D	Anti-smooth muscle antibodies
E	c-ANCA

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Calculator

Normal Values

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A 48-year-old woman presents with symptoms of parotid swelling, and dry eyes. She also avoids eating dry foods like cheese biscuits because her mouth is dry, and that she has recently had to have her plate from her dental implant refitted because it is rubbing on her gums. Other history of note is treatment for oral candidiasis 3 months ago. On examination her blood pressure is 145/82 mmHg, she has blepharitis and bilateral parotid enlargement.

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A	Antinuclear antibodies
B	Anti-Ro and Anti-La antibodies
C	Serum protein electrophoresis
D	Anti-smooth muscle antibodies
E	c-ANCA

Explanation

B	Anti-Ro and Anti-La antibodies

This woman has Sjögren's syndrome. This is an autoimmune exocrinopathy characterised by drying of mucus membranes such as conjunctivae, the buccal mucosa, and the vagina in women. Anti-Ro and anti-La antibodies are seen in Sjögren's, and antinuclear antibodies/rheumatoid factor are usually positive, but they are not specific for Sjögren's. Sjögren's can either be primary (on its own) or secondary to other conditions, such as rheumatoid arthritis or systemic lupus erythematosus (SLE). Schirmer's test demonstrates reduced flow of tears and involves placing a bent piece of filter paper in the corner of the eye. Management in the first instance involves replacing tears and saliva with lubricants; women may also require a suitable vaginal lubricant.

A	Antinuclear antibodies

Antinuclear antibodies are non-specific and found in many different conditions, as well as 10% of the asymptomatic healthy normal population.

C	Serum protein electrophoresis

In Sjögren's one would see a polyclonal hypergammaglobulinaemia (ie polyclonal raised IgG). The presentation does not sound like myeloma at all.

D	Anti-smooth muscle antibodies

Anti-smooth muscle antibodies are found in autoimmune hepatitis.

E	c-ANCA

cANCA is found in Wegener's granulomatosis (granulomatosis with polyangitis). This presentation in the clinical vignette does not sound like a vasculitis – with no upper respiratory tract, lower respiratory tract or renal involvement.

21541

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Session Progress

Responses Correct:	0
Responses Incorrect:	72
Responses Total:	72
Responses - % Correct:	0%

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A 59-year-old woman with a long history of asthma comes to the clinic for review. She previously had a myocardial infarction, aged 51. She is currently taking 500 μg fluticasone inhaled bd and salbutamol prn. She complains of a further exacerbation and you prescribe her oral prednisolone. This is her eighth course of oral steroids over the past 3 years. Other past medical history of note includes vertebral fractures diagnosed after an episode of acute pain some 3 months ago. On auscultation of her chest you can hear wheeze throughout both lung fields.

Investigations:

Hb	12.3 g/dl
WCC	5.3×10^9/l
PLT	201×10^9/l
Na^+	139 mmol/l
K^+	4.5 mmol/l
Creatinine	120 mol/l
eGFR	57
T score	- 2.6

Which of the following is the most appropriate therapy for her osteoporosis?

A	Teriparatide
B	Ibandronate
C	Alendronate
D	Strontium
E	Calcium and vitamin D

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Which of the following is the most appropriate therapy for her osteoporosis?

A	Teriparatide
B	Ibandronate
C	Alendronate
D	Strontium
E	Calcium and vitamin D

Explanation

C Alendronate

Guidelines for osteoporosis recommend prescription of a weekly generic bisphosphonate in the first instance. For patients who fail to tolerate a weekly preparation, monthly oral or more intermittent IV preparations may be appropriate. Strontium and teriparatide are reserved for patients with more severe osteoporosis. Her asthma therapy should be reviewed, with consideration of a long acting beta agonist. See also SIGN guideline on osteoporosis.

A Teriparatide

While teriparatide does have some evidence for osteoporotic vertebral fractures, current NICE guidelines recommend bisphonates first and teriparatide is reserved for more severe osteoporosis.

B Ibandronate

Guidelines recommend a weekly oral bisphosphonate first, before an alternative of a different frequency. Ibandronate is given intravenously every 3 months.

D Strontium

Strontium is relatively contraindicated in patients with previous myocardial infarctions, or other thromboembolic diseases (eg pulmonary emboli) as it can increase the thrombotic risk.

E Calcium and vitamin D

This patient is on glucocorticoids and has a fragility fracture (vertebral) and is osteoporotic on her DEXA scan (T score <–2.5). She therefore does need therapy and bone protection and calcium and vitamin D is insufficient on its own.

21567

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Responses Correct:	0
Responses Incorrect:	73
Responses Total:	73
Responses - % Correct:	0%

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A 54-year-old man is admitted via the medical take. He has been seen on a number of occasions over the past few months by his GP complaining of nasal stuffiness. On this occasion, he presented with worsening cough, and two episodes of haemoptysis. Laboratory testing reveals a creatinine of 285 mol/l, markedly raised erythrocyte sedimentation rate (ESR) and positive c-ANCA. Chest X-ray reveals diffuse shadowing.

Given the likely diagnosis, which one of the following options would you give as a component of initial therapy in this patient?

A	IV methylprednisolone
B	Prednisolone
C	Hydrocortisone
D	Methotrexate
E	Azathioprine

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Given the likely diagnosis, which one of the following options would you give as a component of initial therapy in this patient?

A	IV methylprednisolone
B	Prednisolone
C	Hydrocortisone
D	Methotrexate
E	Azathioprine

Explanation

A	IV methylprednisolone

This patient has strong evidence pointing towards a diagnosis of Wegener's granulomatosis (granulomatosis with polyangitis). This is a systemic vasculitis of mainly medium- and small-calibre vessels, and is associated with of systemic necrotising angiitis, necrotising granulomatous inflammation of the respiratory tract, and necrotising glomerulonephritis. This patient has evidence of lung involvement and established renal damage, and warrants intravenous therapy to establish remission. The gold-standard choice for intravenous induction is pulsed therapy with IV methylprednisolone and cyclophosphamide. Rituximab has been shown to be non-inferior to cyclophosphamide as the induction agent in recent clinical trials. IV steroids are later converted to oral prednisolone and a suitable steroid-sparing agent, such as methotrexate or azathioprine. It should be noted that patients on high-dose prednisolone and cyclophosphamide are at increased risk of pneumocystis pneumonia, and co-trimoxazole prophylaxis should be considered. Good prognosis in Wegener's is very closely linked to early aggressive intervention, with over 90% of patients improving on cyclophosphamide and methylprednisolone in combination; remission however is only achieved in 75%.

B	Prednisolone

This patient has life- and organ- threatening vasculitis and needs steroids fast. The most effective route of administration, with the most rapid onset of action, is intravenous methylprednisolone, not oral prednisolone.

C	Hydrocortisone

This patient has life- and organ-threatening vasculitis and needs steroids fast. The most effective route of administration, with the most rapid onset of action, is intravenous methylprednisolone, not intravenous hydrocortisone.

D	Methotrexate

Steroid-sparing agents like methotrexate and azathioprine take 8–12 weeks before exerting any benefit, and therefore are far too slow for an induction agent. They are used as maintenance of remission agents.

E	Azathioprine

Steroid-sparing agents like methotrexate and azathioprine take 8–12 weeks before exerting any benefit, and therefore are far too slow for an induction agent. They are used as maintenance of remission agents.

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Responses Correct:	0
Responses Incorrect:	74
Responses Total:	74
Responses - % Correct:	0%

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You are asked by the obstetricians to review a 28-year-old woman who has had three previous miscarriages. Each of her miscarriages occurred at around the 14th week of pregnancy. Blood testing showed positive antiphospholipid antibodies. Further questioning into her medical history revealed a history of venous thrombosis after a plane flight. She is 8 weeks' pregnant. She is commenced on low-dose aspirin.

Which further intervention would you implement?

A	Warfarin therapy
B	Subcutaneous low-molecular-weight heparin dailyy
C	Prednisolone 40 mg daily
D	Azathioprine therapy
E	IV immunoglobulin therapy

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Which further intervention would you implement?

A	Warfarin therapy
B	Subcutaneous low-molecular-weight heparin dailyy
C	Prednisolone 40 mg daily
D	Azathioprine therapy
E	IV immunoglobulin therapy

Explanation

B	Subcutaneous low-molecular-weight heparin dailyy

This patient has evidence of the antiphospholipid syndrome (APLS). This is characterised by recurrent miscarriage with three unexplained mid-trimester fetal losses and a venous thrombosis, albeit somewhat 'provoked'. She likely has antiphospholipid antibodies. Standard therapy where there is recurrent miscarriage and a diagnosis of APLS is low-molecular-weight heparin and low-dose aspirin during pregnancy and approximately 6 weeks postpartum, which is also a prothrombotic state. APLS is thought to be the cause of complications in around 45/100 000 pregnancies.

A	Warfarin therapy

Warfarin is teratogenic and contra-indicated in pregnancy, particularly in the first and third trimesters. Outside pregnancy, antiphospholipid antibody syndrome, patients with a history of thrombosis are usually managed with warfarin therapy.

C	Prednisolone 40 mg daily

There is no indication for prednisolone, unless there are features of catastrophic antiphospholipid syndrome (multi-organ involvement), which this lady does not have.

D	Azathioprine therapy

There is no indication for immunosuppression with azathioprine. She needs vascular prophylaxis and anticoagulation.

E	IV immunoglobulin therapy

There is no indication for immunomodulation with IV immunoglobulin therapy. She needs vascular prophylaxis and anticoagulation.

33261

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Session Progress

Responses Correct:	0
Responses Incorrect:	75
Responses Total:	75
Responses - % Correct:	0%

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A 32-year-old man is referred as an emergency by his GP. He presents with a history of haemoptysis over the past few days, with cough, fevers, nausea and vomiting. The GP had diagnosed flu, but the patient re-presented a few days later, and routine bloods revealed Hb 9.2 g/dl and a creatinine of 385 mol/l. On examination, he is severely short of breath and has bilateral basal inspiratory crackles on auscultation of the lung fields. Urgent renal biopsy the day after admission reveals a necrotising glomerulonephritis with linear immunoglobulin and complement deposits on the basement membrane. While awaiting a bed on the renal ward, he suffers a large haemoptysis, (20–30 ml of blood).

Given the likeliest diagnosis, which step would be most appropriate in his initial management?

A	Plasmapheresis
B	Commence oral prednisolone
C	Commence oral cyclophosphamide
D	Commence IV methylprednisolone and cyclophosphamide
E	Commence IV furosemide therapy

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A 32-year-old man is referred as an emergency by his GP. He presents with a history of haemoptysis over the past few days, with cough, fevers, nausea and vomiting. The GP had diagnosed flu, but the patient re-presented a few days later, and routine bloods revealed Hb 9.2 g/dl and a creatinine of 385 mol/l. On examination, he is severely short of breath and has bilateral basal inspiratory crackles on auscultation of the lung fields. Urgent renal biopsy the day after admission reveals a necrotising glomerulonephritis with linear immunoglobulin and complement deposits on the basement membrane. While awaiting a bed on the renal ward, he suffers a large haemoptysis, (20–30 ml of blood).

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A	Plasmapheresis
B	Commence oral prednisolone
C	Commence oral cyclophosphamide
D	Commence IV methylprednisolone and cyclophosphamide
E	Commence IV furosemide therapy

Explanation

D	Commence IV methylprednisolone and cyclophosphamide

This patient has strong evidence of Goodpasture's syndrome. Goodpasture's syndrome is an uncommon condition with an incidence of 0.5/1 000 000 per year. There is a male predominance, and age at presentation follows a bimodal distribution: young men presenting with a pulmonary–renal picture in the 20–30-year age group, and elderly women presenting with a predominantly renal picture. The safest way to secure a diagnosis is by renal biopsy, and the typical picture demonstrated is a necrotising glomerulonephritis, with positive staining for both immunoglobulin and complement. Where there is severe haemoptysis, rapid removal of anti-GBM antibody is indicated, and the best way to do this is by plasmapheresis at a specialist centre. This is usually accompanied by pulsed therapy with IV methylprednisolone and cyclophosphamide. Prognosis is dependent on presenting renal function; a high percentage of patients who have lost more than 50% of their renal function at diagnosis unfortunately progress to long-term renal replacement therapy.

A	Plasmapheresis

This patient has Goodpasture's syndrome with a pulmonary–renal syndrome. The best initial management would be intravenous methylprednisolone and cyclophosphamide and then plasmapheresis, which is usually only available in specialist centres – the question says he is 'awaiting a bed on the renal ward'. Therefore while plasmapheresis is being arranged, the patient should be given IV methylprednisolone and cyclophosphamide.

B	Commence oral prednisolone

This patient has life-threatening pulmonary–renal syndrome and needs rapid induction of remission; oral prednisolone would be too slow to achieve the best possible outcome.

C	Commence oral cyclophosphamide

This patient has life-threatening pulmonary–renal syndrome and needs rapid induction of remission; Treatment is tailored according to severity and extent of disease. The level of immunosuppression should reflect the severity of vasculitis. Cyclophosphamide can be given orally daily or pulsed intravenously at 2–3-week intervals. There has been a move towards using intravenous therapy in recent times.

E	Commence IV furosemide therapy

This patient needs immunosuppression for Goodpasture's disease. The haemoptysis is due to pulmonary haemorrhage secondary to vasculitis, not pulmonary oedema. A diuretic would be the wrong therapy.

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Responses Correct:	0
Responses Incorrect:	76
Responses Total:	76
Responses - % Correct:	0%

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You review a 54-year-old man who complains of progressive palmar contracture of the little and ring fingers of the left hand that has worsened over the past 12 months or so. On examination of the palmar surface of the hand, you can feel a number of hard nodules and longitudinal firm cords that extend to the fingers.

Which one of the following fits best with the underlying condition?

A	Alcohol abuse is present in around 20% of sufferers
B	There is an association with Ledderhose disease
C	Atenolol may be of value as medical therapy
D	Patients usually suffer associated pain
E	Previous myocardial infarction is not an associated risk factor

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B	There is an association with Ledderhose disease
C	Atenolol may be of value as medical therapy
D	Patients usually suffer associated pain
E	Previous myocardial infarction is not an associated risk factor

Explanation

B	There is an association with Ledderhose disease

This patient has Dupuytren's contracture of the hands. The condition is painless and has a male:female predominance of 10:1. Ledderhose disease is involvement of the plantar fascia (in the feet) by a similar process of nodule and cord formation leading to contraction of the toes. There are marked ethnic differences in the prevalence of Dupuytren's contracture, with prevalence rates approaching 25% in elderly Scandinavians. Alcoholism is an associated factor in around 10% of cases, diabetes mellitus in around 8% of cases. Other associations include previous myocardial infarction, hand trauma, HIV infection and cigarette smoking. Surgery followed by physiotherapy to improve finger function is the recommended course of action. Collagenase therapy may be an alternative to surgery in some cases.

A	Alcohol abuse is present in around 20% of sufferers

Alcohol excess is associated with 10% of sufferers.

C	Atenolol may be of value as medical therapy

Chronic atenolol use may be associated with Dupuytren's contracture and therefore is a potential cause, not therapy.

D	Patients usually suffer associated pain

Duputryen's contracture is usually painless.

E	Previous myocardial infarction is not an associated risk factor

Previous myocardial infarction is an associated factor.

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Responses Correct:	0
Responses Incorrect:	77
Responses Total:	77
Responses - % Correct:	0%

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A 40-year-old woman reports intermittent joint pains affecting her wrists, ankles and knees for the last 6 months. She describes each episode as involving pain, swelling and erythema in one of the above joints, which usually resolves with anti-inflammatory drugs over 1–2 days. Recently the frequency of attacks has increased to 2–3 times per week from the previous 2–3 attacks every month. The last episode involving the right knee occurred 3 days ago. Examination in clinic was unremarkable for synovitis in any of the joints.

Which one of the following is the most appropriate initial step?

A	Ask the patient to report to medical services ASAP during next attack
B	X-ray of hands
C	Bone scan
D	Anti-nuclear antibody (ANA) testing
E	Anti-neutrophil cytoplasmic antibody (ANCA) testing

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B	X-ray of hands
C	Bone scan
D	Anti-nuclear antibody (ANA) testing
E	Anti-neutrophil cytoplasmic antibody (ANCA) testing

Explanation

A	Ask the patient to report to medical services ASAP during next attack

The patient is suffering from palindromic rheumatism, affecting mostly large joints. This is characterised by one or more features of inflammation, such as pain, swelling and erythema affecting an articular or periarticular site which lasts less than 72 hours before recovering completely. Any of the joints may be affected. In approximately 50% of patients, this may progress to rheumatoid arthritis (RA). The factors suggesting progression are small joint involvement, and a positive rheumatoid factor (RF) or anti-cyclic citrullinated peptide (CCP).

The most common cause of recurrent or relapsing arthritis, however, is crystal arthritis. It is therefore important to ask the patient to report to clinic in the event of a future attack for synovial fluid aspiration and examination for urate and calcium pyrophosphate dehydrate (CPPD) crystals. Hyperuricaemia may be present but is not diagnostic and so testing for serum uric acid is not the correct answer here.

Other diseases, such as systemic autoinflammatory disorders (periodic fever syndromes), Whipple's disease, arthritis associated with hyperlipidaemia and intermittent hydrarthrosis, should be taken into account in the differential diagnosis of patients with recurrent arthritis.

B	X-ray of hands

This lady has a 6-month history and therefore X-rays are unlikely to be abnormal. An ultrasound (or MRI) to look for subclinical synovitis would be far more helpful than X-rays.

C	Bone scan

A bone scan would confer a lot of radiation for this young woman which is not justified by her symptoms.

D	Anti-nuclear antibody (ANA) testing

An ANA test is non-specific and unlikely to be helpful if positive. A far more useful test would be an anti-cyclic citrullinated peptide (CCP) antibody, which is more sensitive and more specific for a diagnosis of rheumatoid arthritis (RA) than rheumatoid factor, and can predate the clinical onset of RA.

E	Anti-neutrophil cytoplasmic antibody (ANCA) testing

This presentation does not sound like vasculitis at all, and therefore ANCA testing is incorrect.

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Responses Correct:	0
Responses Incorrect:	78
Responses Total:	78
Responses - % Correct:	0%

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You make a diagnosis of RA in a 30-year-old woman. She has one 4-year-old son and informs you that she is interested in having another child. Her arthritis is very active, and she needs to have treatment started.

According to current guidelines, which one of the following agents would be the most appropriate choice?

A	Methotrexate
B	Leflunomide
C	Sulphasalazine
D	Azathioprine
E	Infliximab

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B	Leflunomide
C	Sulphasalazine
D	Azathioprine
E	Infliximab

Explanation

C	Sulphasalazine

None of the medications used in the treatment of arthritis is absolutely safe during pregnancy. Careful consideration of the risk–benefit ratio is needed, on an individual basis. Drugs that are definitely contra-indicated in pregnancy include NSAIDs (first trimester, due to risk of abortion) and methotrexate (teratogenicity). At present the recommended therapies are sulfasalazine and hydroxychloroquine, or azathioprine if the benefit–risk ratio is in favour of this. Sulfasalazine can be safely used prior to and during all stages of pregnancy. It is compatible with breastfeeding, though should be advised with caution because of the rare possibility that the mother is a slow acylator.

A	Methotrexate

Methotrexate (MTX) is teratogenic and patients should not conceive while on MTX. Pregnancies should be planned, allowing MTX to be stopped and a wash-out period of 3–6 months before safe conception. Patients should take high-dose 5 mg daily folic acid prenatally and during pregnancy.

B	Leflunomide

Leflunomide is teratogenic and has a very long wash out period (up to 2 years). If a patient wishes to conceive, an accelerated washout may be achieved with activated charcoal or cholestyramine, and the leflunomide level can be measured post wash out to ensure it is below a safe limit to allow conception.

D	Azathioprine

Azathioprine can be safely used in pregnancy, however it is not very effective for the joints in rheumatoid arthritis, and therefore sulphasalazine is preferred. Women with severe rheumatic disease that is otherwise hard to control may use azathioprine during pregnancy. No apparent congenital malformations are known with doses up to 2 mg/kg/day. However in case series, the maternal use of azathioprine in pregnancy was associated with small-for-gestational-age infants, premature rupture of membranes, and intrauterine growth retardation.

E	Infliximab

No increase in pregnancy or birth complications has been shown with infliximab, etanercept or adalimumab. While data on newer biological treatments (including anti-tumour necrosis factor A inhibitors) is reassuring, so far no significant increased risk has been demonstrated and their use in pregnancy is not currently recommended.

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Responses Correct:	0
Responses Incorrect:	79
Responses Total:	79
Responses - % Correct:	0%

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A 24-year-old woman presents with pain, swelling and stiffness in the small joints of her hands and wrists for 2 weeks. On further questioning she says she has been feeling more tired over the past 3 months and has given up her dance class because of aching joints in her feet. She has been previously fit and healthy. Her mother-in-law suffers from rheumatoid arthritis. She works as school teacher, smokes four cigarettes a day and drinks alcohol on occasions.

Which one of the following is the strongest risk factor for developing rheumatoid arthritis in this case?

A	Smoking
B	Alcohol
C	Exercise (dance classes)
D	Family history
E	Occupation

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A 24-year-old woman presents with pain, swelling and stiffness in the small joints of her hands and wrists for 2 weeks. On further questioning she says she has been feeling more tired over the past 3 months and has given up her dance class because of aching joints in her feet. She has been previously fit and healthy. Her mother-in-law suffers from rheumatoid arthritis. She works as school teacher, smokes four cigarettes a day and drinks alcohol on occasions.

Which one of the following is the strongest risk factor for developing rheumatoid arthritis in this case?

A	Smoking
B	Alcohol
C	Exercise (dance classes)
D	Family history
E	Occupation

Explanation

A	Smoking

This lady has rheumatoid arthritis (RA). RA commonly presents as a symmetrical arthritis affecting the small joints of the hands and wrists. Smoking is the strongest environmental risk factor for developing RA, especially in those that are anti- cyclic citrullinated peptide (CCP) positive. Smoking may contribute to citrullination (post-translational modification of arginine residues) in the lungs. This lady should be encouraged to stop smoking, which will help her joints, as well as her general health.

B	Alcohol

Alcohol is not a risk factor for developing rheumatoid arthritis, and in fact may lower the risk.

C	Exercise (dance classes)

Exercise is not a risk factor for rheumatoid arthritis. Overuse of a joint may increase the risk of osteoarthritis.

D	Family history

This lady's mother in law (not a blood relative) has rheumatoid arthritis, and therefore does not contribute to her genetic risk.

E	Occupation

There has been interest in occupational risk factors for rheumatoid arthritis, although nil conclusive identified. This patient as a teacher does not put her at an increased risk.

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Responses Correct:	0
Responses Incorrect:	80
Responses Total:	80
Responses - % Correct:	0%

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A 66-year-old woman presents to the clinic with a history of arthralgia affecting the small joints of her hands, feet and wrists for the past 4 months. Yhe pain in her fingers gets worse when she goes out in the cold without gloves. She has been feeling extremely tired. She has noticed an erythematous, non-pruritic rash over both legs. The examination reveals early synovitis of joints of the hands and feet and raised non-blanching erythematous purpura over the extensor aspects of both legs.

Investigations:

Hb	11.4 g/dl
WCC	4.2×10^9/l
PLT	180×10^9/l
ESR	88 mm/h
CRP	6.7 mg/dl (<10)
ANA	+
RF	+
C3	Normal
C4	Low

Results of the radiography of hands and feet are awaited.

Which one of the following is the most likely underlying cause of her finger symptoms?

A	Raynaud's
B	Mixed connective tissue disease
C	Cryoglobulinaemia
D	Subacute bacterial endocarditis
E	Polyarteritis nodosa

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Normal Values

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C	Cryoglobulinaemia
D	Subacute bacterial endocarditis
E	Polyarteritis nodosa

Explanation

C Cryoglobulinaemia

This lady has a purpuric rash, Raynaud's, polyarthralgia with a positive rheumatoid factor (RF) and low C4, suggestive of cyroglobulinaemia with a likely underlying connective tissue disease.

In RA, RF is positive in 70% of patients, whereas in Sjögren syndrome and cryoglobulinaemia it is prevalent in up to 90% of cases.

A Raynaud's

Although this lady does have a colour change suggestive of Raynaud's, the underlying condition driving this condition is cryoglobulinaemia, which is therefore the best fit. Cryoglobulinaemia is also driving a polyarthralgia/polyarthrit

B Mixed connective tissue disease

We do not know whether she has mixed connective tissue disease as we are not given her anti-RNP antibody status. Cryoglobulinaemia is usually secondary to connective tissue disease, myeloma or infection (most commonly hepatitis C).

D Subacute bacterial endocarditis

Although some of her symptoms could be explained by a subacute bacterial endocarditis (purpuric rash and even the RF), you would expect the history to be shorter with endocarditis, and also both C3 and C4 to be low.

E Polyarteritis nodosa

The rash associated with polyarteritis nodosa is livedo reticularis, and one would usually expect mesenteric ischaemia and mononeuritis multiplex, rather than this constellation of symptoms with arthritis.

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Session Progress

Responses Correct:	0
Responses Incorrect:	81
Responses Total:	81
Responses - % Correct:	0%

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A 44-year-old woman is referred to the ENT Department with recurrent sinusitis. She also has chronic joint pain and generalised malaise. Examination findings are shown in the image below. Blood testing reveals urea of 14.2 mmol/l and creatinine of 310 mol/l.

Which one of the following is most likely to support the suspected diagnosis of Wegener's granulomatosis (granulomatosis with polyangiitis, GPA)?

A	Positive c-ANCA
B	Thrombocytopaenia
C	Polycythaemia
D	Micro-aneurysms on renal biopsy
E	C-reactive protein (CRP) in the normal range

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Calculator

Normal Values

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B	Thrombocytopaenia
C	Polycythaemia
D	Micro-aneurysms on renal biopsy
E	C-reactive protein (CRP) in the normal range

Explanation

A	Positive c-ANCA

Wegener's granulomatosis, or granulomatosis with polyangiitis (GPA), is a systemic vasculitis identified by a triad of systemic necrotising angiitis, necrotising granulomatous inflammation of the respiratory tract and necrotising glomerulonephritis. Features include positive c-ANCA (anti-neutrophil cytoplasmic antibodies), thrombocytosis, raised erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) and granulomatous inflammation on renal or lung biopsy. Treatment is with a combination of high-dose corticosteroids and cyclophosphamide (or rituximab) to induce remission, followed by oral corticosteroids and a suitable second-line steroid-sparing agent.

B	Thrombocytopaenia

In GPA one would expect a thrombocytosis (high platelet count), which is reactive to inflammation.

C	Polycythaemia

In GPA, one would expect an anaemia, normocytic due to anaemia of chronic disease.

D	Micro-aneurysms on renal biopsy

Micro-aneurysms are found in polyarteritis nodosa.

E	C-reactive protein (CRP) in the normal range

In GPA, ESR and CRP are usually both elevated.

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Session Progress

Responses Correct:	0
Responses Incorrect:	82
Responses Total:	82
Responses - % Correct:	0%

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A 32-year-old man presents to the general practitioner after returning from a 1 week holiday in Thailand. He complains of pain on passing urine, and cloudy urine that looks like pus on occasions. There is also joint pain predominantly affecting the knees and ankles, and itchy eyes. On examination there appears to be a psoriatic-type rash affecting the feet.

Given the likeliest diagnosis, which one of the following treatments would best fit with the management of this condition?

A	Methotrexate 2.5mg po weekly
B	Azathioprine
C	Doxycycline 100 mg bd
D	Prednisolone 40 mg po daily
E	Coal tar skin creams

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Calculator

Normal Values

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C	Doxycycline 100 mg bd
D	Prednisolone 40 mg po daily
E	Coal tar skin creams

Explanation

This man has reactive arthritis, possibly as a result of Chlamydia infection acquired during his recent trip to Thailand. This is exemplified by his presentation with probable uveitis, arthritis, urethritis, and keratoderma blennorrhagica. Appropriate treatment during the acute stage would be doxycycline if Chlamydia infection is confirmed, and indomethacin as a non-steroidal agent for symptom relief.

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Peer Responses %

Session Progress

Responses Correct:	0
Responses Incorrect:	83
Responses Total:	83
Responses - % Correct:	0%

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A 48-year-old woman presents to her general practitioner complaining of symptoms of pain and tingling in her hands, which is particularly worse at night. She has an unremarkable past medical history. On examination, Tinel's sign is positive and there is some vague sensory loss over a median nerve distribution; there is also some weakness of the muscles of the thenar eminence.

Which ONE of the following conditions is most likely to be the cause of this problem?

A	Hypothyroidism
B	Anorexia nervosa
C	Hyperthyroidism
D	Addison's
E	Menopause

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Calculator

Normal Values

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A 48-year-old woman presents to her general practitioner complaining of symptoms of pain and tingling in her hands, which is particularly worse at night. She has an unremarkable past medical history. On examination, Tinel's sign is positive and there is some vague sensory loss over a median nerve distribution; there is also some weakness of the muscles of the thenar eminence.

Which ONE of the following conditions is most likely to be the cause of this problem?

A	Hypothyroidism
B	Anorexia nervosa
C	Hyperthyroidism
D	Addison's
E	Menopause

Explanation

A	Hypothyroidism

This patient has symptoms of carpal tunnel syndrome, with pain and tingling at night, thenar eminence wasting and positive Tinel's sign (reproduction of pain and tingling on tapping over median nerve). Associated conditions include hypothyroidism, raised oestrogen levels (oral contraceptive pill or pregnancy), Cushing syndrome and obesity, amongst a number of additional related diseases. Treatment of choice for carpal tunnel syndrome is surgery, although in patients who are surgically unfit, non-steroidal anti-inflammatory drugs, locally injected corticosteroids and nocturnal splints may be usefully employed. Even with treatment of hypothyroidism, or birth of the child, symptoms of carpal tunnel syndrome may not resolve.

B	Anorexia nervosa

Obesity is associated with carpal tunnel syndrome, due to compression of the median.

C	Hyperthyroidism

Hypothyroidism is associated with carpal tunnel syndrome due to excessive soft tissue/collagenous deposition associated with myxoedem.

D	Addison's

Cushing syndrome (i.e the 'opposite' of Addison's) is associated with carpal tunnel syndrome.

E	Menopause

High oestrogen levels, such as during pregnancy or whilst taking oral contraceptives, are associated with carpal tunnel syndrome.

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Session Progress

Responses Correct:	0
Responses Incorrect:	84
Responses Total:	84
Responses - % Correct:	0%

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A 34-year-old sales representative presents with severe pain going down her neck and right arm. She admits that this pain is worse on sitting in her car while driving for long periods. Past history includes two previous road traffic accidents, but nil else of note. On examination there is weakness and sensory loss over a C5/C6 nerve distribution and pain with neck movement, particularly extension. An MRI of the spinal cord is arranged.

Which other investigation would be most useful in this case?

A	Nerve conduction studies
B	Myelogram
C	Autoimmune profile
D	Arthroscopy of the right shoulder
E	Plain X-rays of the right elbow

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Calculator

Normal Values

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A 34-year-old sales representative presents with severe pain going down her neck and right arm. She admits that this pain is worse on sitting in her car while driving for long periods. Past history includes two previous road traffic accidents, but nil else of note. On examination there is weakness and sensory loss over a C5/C6 nerve distribution and pain with neck movement, particularly extension. An MRI of the spinal cord is arranged.

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B	Myelogram
C	Autoimmune profile
D	Arthroscopy of the right shoulder
E	Plain X-rays of the right elbow

Explanation

A	Nerve conduction studies

This patient has symptoms of cervical radiculopathy, resulting from disc degeneration due either to herniation or degenerative change (spondylosis). When there are posterior osteophytes leading to anterior spinal cord compression, as is likely here, patients present with chronic radicular arm pain, numbness and tingling sensations. The investigation of choice is magnetic resonance imaging (MRI) scanning to assess spinal cord encroachment, and nerve conduction studies to assess the degree of nerve damage. Treatment is with physiotherapy and non-steroidal anti-inflammatory agents. Patients will usually improve with time, and surgical intervention is needed in less than 5% of patients.

B	Myelogram

Myelography uses a real-time form of X-ray called fluoroscopy and an injection of contrast material to evaluate the spinal cord, nerve roots and spinal lining (meninges). It is particularly useful for assessing the spine following surgery, and also for assessing disc abnormalities in patients who cannot undergo MRI. A myelogram is not appropriate here as it is invasive and expensive, and there are no contraindications to an MRI in this case

C	Autoimmune profile

This lady has a likely mechanical problem, with no features to suggest an autoimmune/inflammatory cause.

D	Arthroscopy of the right shoulder

This lady has a cervical radiculopathy, i.e. nerves emanating from the cervical spine, and therefore a shoulder arthroscopy is unlikely to h

E	Plain X-rays of the right elbow

The C5/C6 radiculopathy is not related to her elbow. The ulnar nerve is often compressed at the elbow, however.

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Session Progress

Responses Correct:	0
Responses Incorrect:	85
Responses Total:	85
Responses - % Correct:	0%

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A 64-year-old man is referred to you by the Emergency Department. He presents with a diffusely warm, swollen ankle joint although he does not seem in particular pain. Medications include gliclazide 160 mg/day. Examination in the Emergency Department reveals a grossly deformed red, swollen right ankle.

Investigations:

Hb	12.2 g/dl
WCC	6.5×10^9/l
Platelets	186×10^9/l
C-reactive protein	12 mg/l
Ankle x-ray	Loss of joint margin, significant bone destruction and joint remodelling

Which one of the following interventions is most appropriate in this case?

A	Calcium and vitamin D
B	IV Flucloxacillin
C	Immobilisation in a plaster cast
D	Surgical drainage
E	Ibuprofen 400 mg po tds

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Calculator

Normal Values

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B	IV Flucloxacillin
C	Immobilisation in a plaster cast
D	Surgical drainage
E	Ibuprofen 400 mg po tds

Explanation

C	Immobilisation in a plaster cast

This patient has Charcot arthropathy, the clue being that he is not in any pain (it is an anaesthetic joint), the foot is grossly deformed and he likely has underlying type 2 diabetes, indicated by the prescription of gliclazide. Immobilisation in a cast for 3–6 months is the treatment of choice; this is thought to be complemented by use of bisphosphonates: the reduction in bone reabsorption associated with bisphosphonates is thought to accelerate healing. Good control of blood glucose to reduce the risk of microvascular complications is associated with a decreased incidence in Charcot arthropathy, although once established it cannot be reversed.

A	Calcium and vitamin D

Although one facet of treatment is to ensure he is vitamin D replete, the most important part of managing a Charcot joint is to immobilise it and allow healing.

B	IV Flucloxacillin

While the joint is hot and swollen, the normal C-reactive protein and white blood cell count make it unlikely that this is due to osteomyelitis, and therefore antibiotics are not indicated.

D	Surgical drainage

Although the joint appears 'swollen', it is actually grossly deformed due to underlying bone and the CRP is normal, making infection very unlikely, and there is no effusion to drain.

E	Ibuprofen 400 mg po tds

A Charcot joint is anaesthetic and therefore not painful, as given to you in the question, and therefore neither analgesia nor anti-inflammatories is indicated.

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Session Progress

Responses Correct:	0
Responses Incorrect:	86
Responses Total:	86
Responses - % Correct:	0%

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A 45-year-old woman presents with chest pain to the Emergency Department. She has a history of asthma for which she uses occasional salbutamol, and she smokes approximately 30 cigarettes per day. There is no history of hypersensitivity to non-steroidal anti-inflammatory agents. There is pain with coughing and deep breathing, with tenderness of the 2nd to 5th costochondral junctions with the sternum. Chest X-ray is unremarkable and electrocardiogram (ECG) shows no acute changes; saturations are 98% on air.

Which of the following would be the most appropriate intervention in this case?

A	Low-molecular weight heparin
B	Aspirin 75 mg po
C	Diclofenac 50 mg po tds
D	Amoxicillin 500 mg po tds
E	Fluticasone 50 µg inhaler bd

33274

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Calculator

Normal Values

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C	Diclofenac 50 mg po tds
D	Amoxicillin 500 mg po tds
E	Fluticasone 50 µg inhaler bd

Explanation

C	Diclofenac 50 mg po tds

This patient has costochondritis (Tietze syndrome), which has a higher prevalence in women and is commoner over the age of 40 years. It is associated with tenderness over the costochondral junctions and/or sternum, pain on coughing and deep breathing, and equal involvement with both sides of the chest. Non-steroidals would be an appropriate first-line intervention for pain relief. It is of course an ideal opportunity to reinforce advice about smoking cessation.

A	Low-molecular weight heparin

A pulmonary embolism is very unlikely given the normal ECG, lack of tachycardia, normal oxygen saturations on room air and tenderness on palpation of the chest wall.

B	Aspirin 75 mg po

Aspirin 75 mg would be inadequate to treat acute coronary syndrome, which is unlikely in any case given her lack of ECG changes and no mention of cardiac enzymes being elevated.

D	Amoxicillin 500 mg po tds

This lady does not have productive cough, fever, raised CRP or crackles on examination, and therefore antibiotics in this case are inappropriate and may perpetuate antibiotic resistance.

E	Fluticasone 50 µg inhaler bd

There is no suggestion that this is an exacerbation of asthma – she has no wheeze or dyspnoea, but does have pain on palpation of her chest wall at the costochondral junction.

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Responses Correct:	0
Responses Incorrect:	87
Responses Total:	87
Responses - % Correct:	0%

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A 36-year-old woman presents with pain in her right elbow on forearm extension and wrist extension. She is a keen gardener and has recently been planting spring bulbs. On examination the elbow is held in partial flexion, pain is reproduced on resisted wrist extension and there is pain on palpation over the lateral epicondyle.

Which of the following interventions would be most appropriate to gain short term relief for this patient?

A	Local steroid/anaesthetic injection
B	Flexion exercise programme
C	Oral prednisolone
D	Elbow immobilisation
E	Early surgical intervention for medial tendon release

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Calculator

Normal Values

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B	Flexion exercise programme
C	Oral prednisolone
D	Elbow immobilisation
E	Early surgical intervention for medial tendon release

Explanation

A	Local steroid/anaesthetic injection

This lady has a lateral epicondylitis (i.e. tennis elbow). Local steroid/anaesthetic injection and use of non-steroidal anti-inflammatory agents may both be of benefit.

B	Flexion exercise programme

With a lateral epicondylitis, physiotherapy and, in particular, stretching exercises, may also be of benefit, but the benefits of physiotherapy occur over the longer term.

C	Oral prednisolone

Oral prednisolone is not appropriate for a lateral epicondylitis, which is localised inflammation. Systemic steroids are likely to have side effects, despite only minimal efficacy.

D	Elbow immobilisation

While restricted activity may be appropriate, it would be inappropriate for this patient to have her elbow completely immobilised because her muscles are likely to waste and therefore cause more problems later.

E	Early surgical intervention for medial tendon release

Surgical intervention for lateral tendon release may be appropriate in patients who fail to respond to medical therapy.

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Session Progress

Responses Correct:	0
Responses Incorrect:	88
Responses Total:	88
Responses - % Correct:	0%

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A 64-year-old patient with a long history of rheumatoid arthritis attends the clinic for review. She is managed on low-dose methotrexate, folic acid and non-steroidal anti-inflammatory agents for her disease, but has noticed a worsening in her rheumatoid nodules over the past few months and has developed dry eyes most recently. On examination she has splenomegaly.

Investigations reveal a low total white count of 3.4×10^9/l; she is also anaemic, with haemoglobin of 9.8 g/dl and a platelet count of 105×10^9/l.

Which of the following interventions would be most appropriate initially in this case?

A	Stop methotrexate therapy
B	Folinic acid rescue
C	Splenectomy
D	Busulphan
E	Pulsed corticosteroid therapy

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Calculator

Normal Values

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A 64-year-old patient with a long history of rheumatoid arthritis attends the clinic for review. She is managed on low-dose methotrexate, folic acid and non-steroidal anti-inflammatory agents for her disease, but has noticed a worsening in her rheumatoid nodules over the past few months and has developed dry eyes most recently. On examination she has splenomegaly.

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A	Stop methotrexate therapy
B	Folinic acid rescue
C	Splenectomy
D	Busulphan
E	Pulsed corticosteroid therapy

Explanation

E	Pulsed corticosteroid therapy

This patient has Felty syndrome, as evidenced by splenomegaly and worsening of extra-articular manifestations in a patient with a long-standing history of rheumatoid arthritis. This, coupled with the low white count, is highly suggestive of Felty syndrome, which has a 60–70% female predominance and is usually recognised from the fifth decade onwards in patients who have had rheumatoid arthritis for an average of 10 years or more. Pulsed corticosteroid and/or cyclophosphamide therapy may be effective in raising neutrophil counts, as may appropriate switching/intensification of DMARD therapy for the rheumatoid.

A	Stop methotrexate therapy

This is not methotrexate toxicity but Felty syndrome. The key is the worsening of RA features and splenomegaly.

B	Folinic acid rescue

This is not methotrexate toxicity but Felty syndrome. Folinic acid rescue is the treatment for methotrexate toxicity.

C	Splenectomy

Splenectomy is one option in patients with Felty syndrome who fail to respond to medical intervention.

D	Busulphan

This patient does not have development of lymphoma, but rather Felty syndrome.

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Session Progress

Responses Correct:	0
Responses Incorrect:	89
Responses Total:	89
Responses - % Correct:	0%

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A 54-year-old woman with a long history of diabetes mellitus, which is now managed with insulin, presents for review. She has acute pain and swelling over the first metatarsophalangeal joint of her left foot and there are rounded, calcium-like deposits in her ear cartilage.

Investigations:

Haemoglobin A1c (HbA1c)	72.68 mmol/mol (8.8%)
WCC	6.8×10^9/l
Creatinine	145 mol/l
K^+	5.8 mmol/l
Na^+	134 mmol/l

Which of the following would be the most appropriate initial management of this patient?

A	Diclofenac 50 mg po tds
B	Colchicine
C	Allopurinol 100 mg po daily
D	Paracetamol
E	Prednisolone 40 mg po daily

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Normal Values

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Which of the following would be the most appropriate initial management of this patient?

A Diclofenac 50 mg po tds

B Colchicine

C Allopurinol 100 mg po daily

D Paracetamol

E Prednisolone 40 mg po daily

Explanation

B Colchicine

This patient has chronic renal failure, probably as a result of longstanding poorly controlled diabetes mellitus, and has developed gout. As such, colchicine would be the initial treatment of choice. The creatinine is a little high, although the eGFR is likely to be over 30 and therefore colchicine could be 'renally dosed' at 500 mcg bd. The incidence of renal stones is increased in patients with gout: 80% of these are uric acid stones.

A Diclofenac 50 mg po tds

Non-steroidals in this case may exacerbate salt and water retention and worsen renal function.

C Allopurinol 100 mg po daily

Allopurinol should not be started during an acute attack, but could be started at least 4 weeks after the attack has settled. The contraindication to allopurinol in renal impairment is relative, and this drug can be used even in moderate–severe renal failure providing dose reduction is employed, although of course it should be begun after the acute episode.

D Paracetamol

Paracetamol is not likely to be sufficiently effective enough for the acute pain and inflammation of gout.

E Prednisolone 40 mg po daily

Corticosteroids are reserved for those patients in whom non-steroidal anti-inflammatory agents and colchicine are either contraindicated or there is patient intolerance.

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Difficulty: Average

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Session Progress

Responses Correct:	0
Responses Incorrect:	90
Responses Total:	90
Responses - % Correct:	0%

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A 34-year-old woman complains of severe pain and aching in her fingers and toes on going out into cold weather. She reports a triad of initial whitening of the fingers resulting from vasospasm, followed by blue discoloration and then reddening and pain. She is currently taking atenolol 50 mg po daily for hypertension and takes methysergide for intermittent migraine. She has a history of reflux nephropathy and her creatinine is 180 µg/l. Her methysergide is discontinued.

Which other intervention would be most appropriate for this patient?

A	Start isosorbide dinitrate
B	Substitute ramipril for her atenolol
C	Start prednisolone 40 mg po daily
D	Start diclofenac 50 mg po tds
E	Start verapamil

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Explanation

B Substitute ramipril for her atenolol

Both methysergide and atenolol are possible causes of Raynaud's phenomenon, or can exacerbate existing Raynaud's as described here. Other causes include ergotamine, vinblastine, bleomycin and oral contraceptives. Angiotensin II blockers also have the best evidence for reno-protection where there is underlying autoimmune pathology. Calcium channel antagonists such as nifedipine may be of value in improving symptoms.

A Start isosorbide dinitrate

There is no evidence for nitrates in improving Raynaud's symptoms.

C Start prednisolone 40 mg po daily

There are no features of underlying connective tissue disease and this may well be primary Raynaud's or related to medications. Raynaud's phenomenon has many causes, including systemic sclerosis, mixed connective tissue disease, systemic lupus erythematosus (SLE), rheumatoid arthritis, polycythemia and thromboangiitis obliterans.

D Start diclofenac 50 mg po tds

NSAIDs are contraindicated given her renal failure and would not improve her Raynaud's symptoms in any case.

E Start verapamil

Although verapamil is a calcium channel blocker it is not used for Raynaud's, unlike nifedipine (and even amlodipine).

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A 63-year-old lady presents with a 5-year history of Raynaud's phenomenon affecting the fingers and, to a lesser extent, the toes. Recently this has become a lot worse, with attacks coming on unprovoked by temperature changes and lasting longer. She has noticed some swallowing difficulties and symptoms of acid reflux recently. Her fingers have become increasingly restricted over 5 years, but now they are more swollen and painful. She feels tired, with a recent onset of headaches and has lost 6 pounds in weight with loss of appetite. Examination of the fingers reveals acrocyanosis of the digits with splinter haemorrhages in a warm examination room. Her blood pressure is 210/115 mmHg. The rest of the examination is unremarkable.

Which of the following is the most important initial investigation with respect to determining her outlook?

A	Double-stranded DNA antibodies
B	Liver function tests
C	Urea and electrolytes
D	Urine dipstick
E	Anti-neutrophil cytoplasmic antibodies

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A	Double-stranded DNA antibodies
B	Liver function tests
C	Urea and electrolytes
D	Urine dipstick
E	Anti-neutrophil cytoplasmic antibodies

Explanation

D	Urine dipstick

This lady's presentation is very suggestive of a connective tissue disease, with a recent acceleration and deterioration of severe progressive Raynaud's. The other features raise the possibility of scleroderma, but the diagnosis is secondary to determining the extent of vital organ involvement. The presence of splinter haemorrhages raises the likelihood of an immune complex vasculitis. The elevated blood pressure and headaches immediately raise the possibility of a renal component. Therefore her urine dipstick (the presence of blood and protein) and importantly her urine protein:creatinine ratio, to quantify the degree of proteinuria, are critical to determine renal involvement.

A	Double-stranded DNA antibodies

Although the presence of anti-dsDNA antibodies would give an indication of prognosis, it would not help to determine organ involvement and disease status.

B	Liver function tests

Liver involvement is not particularly common in connective tissue diseases and therefore not as critical in determining renal involvement.

C	Urea and electrolytes

Although increased creatinine level is a later stage, it signifies damage rather than 'involvement'. The first sign is the urine dipstick.

E	Anti-neutrophil cytoplasmic antibodies

Although the presence of ANCA would give an indication of the diagnosis, it would not help to determine organ involvement and disease status.

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A 25-year-old lady presents with episodic discoloration of the fingers of both hands – white followed by a bluish tinge – first noticed 2 years ago. She has otherwise been fit and healthy and denies any previous medical problems.

Which of the following investigations would be most useful in determining whether the Raynaud's is related to vasculitis?

A	Rheumatoid factor (RF) testing
B	Antinuclear antibody testing
C	X-ray of the hands
D	X-ray of the chest
E	Nail fold capillaroscopy

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C	X-ray of the hands
D	X-ray of the chest
E	Nail fold capillaroscopy

Explanation

E	Nail fold capillaroscopy

This young woman has symptoms of Raynaud's syndrome. It will be important to differentiate between primary and Raynaud's secondary to connective tissue disease (CTD). The most useful initial assessment must include nail fold capillary loop examination, ideally by capillaroscopy or, if not available, by ophthalmoscope using magnification. Patients with CTD such as systemic sclerosis most often will show a positive ANA and dilated, distorted, missed nail fold capillary loops (i.e. with gaps – areas of drop-out).

A	Rheumatoid factor (RF) testing

The RF is non-specific and is found in multiple conditions, including infections.

B	Antinuclear antibody testing

A close second to nail fold capillaroscopy. Measurement of anti-nuclear antibodies, whilst being non-specific, may provide additional clarification for Raynauds.

C	X-ray of the hands

X-rays are likely to be completely normal, even in secondary Rayaud's associated with connective tissue disease.

D	X-ray of the chest

X-ray of the chest is useful to determine whether cervical ribs are present, as a cause of Raynauds, but not to determine any other causes.

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You review a 48-year-old woman who complains of sudden visual loss affecting her left eye. On examination you see flame haemorrhages and cotton wool spots in one segment of the retina. Blood testing reveals a prolonged APTT and fasting plasma glucose of 9.1 mmol/l.

Which one of the following diagnoses would you consider as the most important cause of her visual loss?

A	Wegener's granulomatosis
B	Anti-phospholipid antibody syndrome
C	Diabetes mellitus
D	Open-angle glaucoma
E	Giant cell arteritis

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Normal Values

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B	Anti-phospholipid antibody syndrome
C	Diabetes mellitus
D	Open-angle glaucoma
E	Giant cell arteritis

Explanation

B	Anti-phospholipid antibody syndrome

This patient has branch retinal vein occlusion (BRVO), and the prolonged APTT is suggestive of anti-phospholipid antibody syndrome. Other conditions associated with BRVO include diabetes, sarcoidosis, Lyme disease and other causes of thrombophilia. This lady should be anticoagulated once anti-phospholipid syndrome is confirmed.

A	Wegener's granulomatosis

Wegener's granulomatosis (granulomatosis with polyangiitis, GPA) is not associated with a branch retinal vein occlusion. Ocular manifestations include scleritis and uveitis.

C	Diabetes mellitus

The fasting plasma glucose indicative of diabetes is an incidental finding here, and hasn't significantly contributed to the risk of BRVO versus anti-phospholipid antibody syndrome.

D	Open-angle glaucoma

No link between open-angle glaucoma and branch retinal vein occlusion has been demonstrated.

E	Giant cell arteritis

Giant cell arteritis (GCA) is associated with anterior ischaemic optic neuropathy, not a BRVO. Furthermore, she is too young for giant cell arteritis and there are no other supportive features.

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A 56-year-old lady who suffered a road traffic accident some years ago presents to the clinic for review. She has been complaining of increasing pain and weakness in her right arm over the past few months and is now unable to work. Past history of note includes osteoarthritis. On examination there is weakness and wasting of the triceps, wrist and finger extensors, loss of the triceps jerk and sensory loss over the middle fingers of the hand.

Prolapse of which intervertebral disc is most likely to be responsible for her symptoms and signs?

A	C4–5
B	C5–6
C	C6–7
D	C7–T1
E	T1–2

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A	C4–5
B	C5–6
C	C6–7
D	C7–T1
E	T1–2

Explanation

C C6–7

A lateral cervical disc protrusion at the C6–7 level (i.e. the disc between the 6th and 7th cervical vertebrae) compresses the exiting C7 nerve and thus causes pain and weakness over the C7 myotome (triceps, wrist and finger extensors), loss of the triceps jerk and loss of sensation over the C7 dermatome. Pain relief and immobilisation may be appropriate for initial management, although in those who fail to respond, MRI and assessment for surgical decompression are recommended.

A C4–5

C4–5 (C5 nerve root): A herniation at this level can cause shoulder pain and weakness in the deltoid muscle at the top of the upper arm, and does not usually cause numbness or tingling.

B C5–6

C5–6 (C6 nerve root): A C5–6 disc herniation can cause weakness of the biceps (muscles in the front of the upper arms) and wrist extensor muscles. Numbness and tingling along with pain can radiate to the thumb side of the hand. This is one of the most common levels for a cervical disc herniation to occur.

D C7–T1

C7–T1 (C8 nerve root): This level is located at the very bottom of the neck, where the cervical spine meets the thoracic, or upper, back. A herniation here can cause weakness with handgrip, along with numbness and tingling and pain that radiates down the arm to the little finger side of hand.

E T1–2

T1–2 disc protrusion specifically refers to the deterioration of one or more of the intervertebral discs in the thoracic (middle) segment of the spine. The protrusion of a disc between any of the 12 vertebrae in the thoracic spine (T1–12) can cause severe pain and other symptoms if nerve compression is present. Disc protrusion in the thoracic spine, however, is somewhat rare because the thoracic spinal segment is attached directly to the ribcage, keeping the 12 thoracic vertebrae relatively stable and stationary. Lumbar disc protrusion (in the lower back) and cervical disc protrusion (in the neck) are much more common.

The cervical spine is constructed around the vertebrae, or the seven stacked bony building blocks in the spine. They are numbered from top to bottom as C1 to C7. The nerve that is affected by the cervical disc herniation is the one exiting the spine at that level, so at the C5–6 level it is the C6 nerve root that is affected.

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A 40-year-old male with a history of diabetes presented to the clinic with bilateral knee pain. He works as an insurance salesman; he is a non-smoker but drinks on most weekends. He is on insulin for the diabetes and also takes sildenafil occasionally for erectile dysfunction.
On examination, he appeared suntanned with sparse body hair. The knees were swollen and tender with limited range of movement.

Investigations revealed:

Sodium	135 mmol/l
Potassium	5.0 mmol/l
Creatinine	110 μmol/l
Albumin	35 g/l
Bilirubin	30 μmol/l
Serum alanine aminotransferase (ALT)	75 U/l
Serum aspartate transaminase (AST)	65 U/l
Gamma glutamyl transferase	160 U/l
Glucose	14 mmol/l
Luteinising hormone (LH)	0.6 U/l (1–10 U/l)
Follicle-stimulating hormone (FSH)	0.5 U/l (1–7 U/l)
Testosterone	6.8 nmol/l (9–35nmol/l)
X-ray of the knees	showed calcification

What is the most likely cause of the joint abnormality?

A	Osteomalacia
B	Ochronosis
C	Cystinosis
D	Chondrocalcinosis
E	Gout

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Calculator

Normal Values

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Explanation

The mechanism of articular damage is development of pyrophosphate arthropathy with subsequent chondrocalcinosis involving the articular cartilages. Given his constellation of symptoms, haemochromatosis is a consideration, which is inherited in the majority of cases as an autosomal recessive disorder. There is impaired iron metabolism, with excess iron deposited in organs and tissues. The classical triad is: diabetes, bronze skin pigmentation ("bronze diabetes") and liver cirrhosis. It should be remembered that liver function tests can be normal in cirrhosis, as is the case in this patient.
Excess iron deposition is found in the pituitary gland, testes, liver, pancreas and skin.
Pituitary iron deposition leads to secondary failure of testosterone production, and development of hypogonadotrophic hypogonadism. Biochemical findings are: high serum iron, ferritin and transferrin saturation. Liver biopsy shows staining for excess iron.

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A 19-year-old male was referred to the Rheumatology Clinic with a long history of pain in the back and knee joints. The initial problem started with recurrent back and wrist pain when he was 6 years old. He was treated for possible juvenile arthritis, which often responded to analgesia. Over the year the disease has been relapsing and remitting, but since last year the back pain has been constant all over the spine and has not responded to analgesia. Several investigations in the past include X-ray of the spine and knee, rheumatoid factor, antinuclear antibody and autoimmune profile. All these investigations were reported as normal.
He had a normal childhood with no illness and there is no family history of note. He has seen the dermatologists for an abnormal dark-brown pigmentation in his ears and sclera, but no cause was found. On examination, his knees are swollen and painful. He also has tenderness all over his spine. Both sclera and ears show an abnormal dark brown pigmentation.

Investigations:

Hb	10.3 g/dl
WCC	9.8×10^9/l
PLT	250×10^9/l
Na^+	145 mmol/l
K^+	4.3 mmol/l
Ca^{2+}	2.6 mmol/l
Phosphate	0.9 mmol/l
Glucose	4.2 mmol/l
ALP	110 U/l
X-ray spine	Calcification of intervertebral disc
X-ray knees	Soft tissue swelling with meniscal calcification

Urinalysis:

Colour	Dark
Glucose	+++
Blood	-

What is the probable underlying diagnosis?

A	Osteogenesis imperfecta
B	Ankylosing spondylitis
C	Phenylketonuria
D	Alkaptonuria
E	Polyarticular Still's disease

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C	Phenylketonuria
D	Alkaptonuria
E	Polyarticular Still's disease

Explanation

D Alkaptonuria

Alkaptonuria is a hereditary disease characterised by a deficiency of the enzyme homogentisic oxidase, which is responsible for the degradation of homogentisic acid produced from phenylalanine and tyrosine. Accumulation of homogentisic acid causes pigmentation of the urine, sclera and connective tissues. Deposition in the joints causes cartilage pigmentation (ochronosis) and degeneration. Homogentisic acid is a reducing agent, and therefore it gives an incorrect positive Glucostix test but normal Clinitest. Urine, after standing, becomes dark in colour due to oxidation of the product. The knees and spine are commonly affected. The sacroiliac joint may be spared. No curative treatment is yet available.

A Osteogenesis imperfecta

In osteogenesis imperfecta the X-rays are likely to be abnormal and blue sclerae are often observed.

B Ankylosing spondylitis

X-rays would show changes in the sacroiliac joints (erosions, sclerosis, fusion) and there are no pigmentary problems.

C Phenylketonuria

Phenylketonuria (PKU) is an inborn error of metabolism that results in decreased metabolism of the amino acid phenylalanine. Untreated PKU can lead to intellectual disability, seizures, behavioural problems and mental disorder. It may also result in a musty smell and lighter skin.

E Polyarticular Still's disease

Still's disease is not associated with urinary problems or ocular pigmentation.

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A 16-year-old boy presents with arthritis affecting his wrists, knees, ankles and some of his finger joints. He also has marked morning stiffness and a rash which affects his trunk and extremities. You understand from his mother that he has little interest in sport. You also notice a pericarditic rub.

Investigations:

Hb	10.2 g/dl
WCC	5.6×10^9/l
PLT	145×10^9/l
Na^+	140 mmol/l
K^+	5.0 mmol/l
Creatinine	100 mol/l
ESR	58 mm/h
MCV	79 fl
ANA	+ at 1:160

MRI of both knees is suggestive of synovitis; echo cardiogram is suggestive of pericarditis.

Which of the following is the most likely diagnosis?

A	Systemic lupus erythematosus (SLE)
B	Juvenile idiopathic arthritis
C	Rheumatoid arthritis
D	Sarcoidosis
E	Kawasaki disease

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E	Kawasaki disease

Explanation

B Juvenile idiopathic arthritis

Whilst juvenile idiopathic arthritis (Still's disease) normally occurs in younger children, it may occasionally present in adolescents or young adults. Up to 25% of patients have a positive anti-nuclear antibody status. A microcytic anaemia, which tends to be resistant to iron replacement and pericarditis, is often found. Patients may also present with symptoms consistent with uveitis. Options for pharmacotherapy include NSAIDs, corticosteroids, methotrexate and anti-TNF biologicals.

A Systemic lupus erythematosus (SLE)

Multi-system rheumatologic disease may be distinguished from juvenile idiopathic arthritis (JIA) by clinical features and laboratory findings. SLE often presents in adolescence with fever, rash and non-erosive arthritis. The ANA is positive in SLE but also may be present in oligoarticular and polyarticular JIA. Both SLE and systemic-onset JIA may manifest as fever and serositis, but the skin findings are different. In addition, malar rash, nephritis, cytopenia, hypocomplementaemia and anti-double-stranded DNA and other autoantibodies are seen only in SLE.

C Rheumatoid arthritis

A diagnosis of rheumatoid arthritis is reserved for adult patients, whereas this patient is an adolescent.

D Sarcoidosis

Most of the reported cases of childhood sarcoidosis are accompanied by non-specific constitutional symptoms, such as fever, fatigue, malaise and weight loss, as well as symptoms from particular organs, such as the lungs, eyes, skin and lymph nodes. The joints tend not to be affected in children.

E Kawasaki disease

Kawasaki syndrome is a vasculitis in children, with prominent features including cervical lymphadenopathy and 'strawberry red' lips, palms and soles of feet. In some children coronary artery aneurysms may form.

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A 66-year-old man presents with bony pain affecting his left hip and pelvis. He has a past history of prostatism for which he received a transurethral resection of prostate (TURP) some 3 years earlier. On examination there is pain on left hip flexion and internal and external rotation.

Investigations:

Hb	12.1 g/dl
WCC	5.0×10^9/l
PLT	191×10^9/l
Na^+	139 mmol/l
K^+	4.6 mmol/l
Creatinine	145 mol/l
Ca^{++}	2.3 mmol/l
PSA	2.0 µg/l
ALP	360 U/l

X-ray of the left hip and pelvis shows areas of osteolysis and increased bone density, changes consistent with osteoarthritis.

Which of the following is the most likely diagnosis?

A	Metastatic prostatic carcinoma
B	Osteoarthritis of the left hip
C	Myeloma
D	Paget's disease
E	Hyperparathyroidism

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E	Hyperparathyroidism

Explanation

D	Paget's disease

The site described is a typical one for Paget's disease. The X-ray appearance, raised alkaline phosphatase and normal calcium also fit with this. A radionucleotide bone scan may be useful at a later stage for determining the extent of disease. Both a prolonged oral course of bisphosphonates and intermittent IV courses are used for the treatment of Paget's. These inhibit osteolysis and, as such, lead to a reduction in serum alkaline phosphatase (which can be used for serial measurement of treatment response), and reduce the pain associated with Paget's. For patients who fail to respond to bisphosphonates or cannot tolerate them, calcitonin may be a suitable alternative.

A	Metastatic prostatic carcinoma

It is likely that his previous TURP was for benign prostatic hypertrophy. His PSA level now does not give any cause for concern and his calcium is normal.

B	Osteoarthritis of the left hip

X-rays of osteoarthritis show sclerosis, without areas of osteolysis. The isolated elevated ALP also fits with Pagets.

C	Myeloma

His calcium is normal, the ALP is elevated and there are areas of increased bone density on the X-rays, a picture that does not fit with myeloma.

E	Hyperparathyroidism

His calcium is normal.

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A 34-year-old woman is admitted via the Emergency Department after suffering acute lower back pain. X-ray in the department revealed two compression fractures suspicious of osteoporosis. Past medical history of note includes depression and anxiety. On examination her BMI is 16 and her BP is 125/72 mmHg, with a pulse of 65/min, regular.

Investigations:

Hb	11.2 g/dl
WCC	4.6×10^9/l
PLT	202×10^9/l
Na^+	139 mmol/l
K^+	4.5 mmol/l
Creatinine	102 mol/l
Ca^{2+}	2.2 mmol/l
ALP	115 U/l
T-score	-3.1

Which of the following is likely to be the most important contributory factor to her condition?

A	Low BMI leading to secondary ovarian failure
B	Genetic predisposition to osteoporosis
C	Hyperthyroidism
D	Hypovitaminosis D
E	Calcium deficiency

33289

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Calculator

Normal Values

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Which of the following is likely to be the most important contributory factor to her condition?

A Low BMI leading to secondary ovarian failure

B Genetic predisposition to osteoporosis

C Hyperthyroidism

D Hypovitaminosis D

E Calcium deficiency

Explanation

A Low BMI leading to secondary ovarian failure

This patient has a very low BMI (and is slightly bradycardic), and further questioning may reveal that she is not currently menstruating and may not have been for some time. Given that she has significant life years ahead of her, gaining weight is the most appropriate option with respect to restarting ovulation and oestrogenisation. Given questions about the long-term efficacy of bisphosphonates, these would not be the best option here.

B Genetic predisposition to osteoporosis

Clearly a genetic predisposition to osteoporosis might also increase the risk of fracture at an early age, but BMI is almost certainly the greatest contributor to risk here.

C Hyperthyroidism

Hyperthyroidism is another possibility, but we are given no information that she has symptoms or signs of this and indeed she is bradycardic, not tachycardic.

D Hypovitaminosis D

Although a risk factor for demineralisation of bone, her biggest risk factor is low BMI.

E Calcium deficiency

Her calcium is in the normal range.

33289

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A 41-year-old female presents to her general practitioner complaining of dry eyes, dry mouth and vaginal dryness on sexual intercourse. There is no significant past medical history; specifically there is no history of rheumatoid arthritis or connective tissue disease.

Which of the following is a likely clinical feature in this case?

A	4mm wetting per 5 min on Schirmer's testing
B	Increased parotid salivary gland flow
C	Negative anti-Ro antibodies
D	Negative antinuclear antibodies
E	Low oestrogen levels

33320

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Normal Values

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D	Negative antinuclear antibodies
E	Low oestrogen levels

Explanation

A	4mm wetting per 5 min on Schirmer's testing

This woman has Sjögren syndrome, as evidenced by her symptoms of dry mouth and dry eyes and the fact that other mucosal surfaces are affected. It may be primary or secondary (related to other autoimmune conditions). There is plasma cell infiltration of salivary and lacrimal glands with positive anti-Ro and anti-La antibodies, and a definitive positive Schirmer test is defined as < 5 mm wetting per 5 min. Treatment involves use of artificial tears and screening for ophthalmic (corneal dryness and ulceration) and dental (caries) complications.

B	Increased parotid salivary gland flow

This lady with Sjogren is likely to have decreased (not increased) parotid salivary gland flow.

C	Negative anti-Ro antibodies

This lady with Sjogren may have anti-Ro (or -La) antibodies.

D	Negative antinuclear antibodies

This lady with Sjogren may have a positive ANA.

E	Low oestrogen levels

Her oestrogen levels are likely to be normal. She has dyspareunia because of Sjogren exocrinopathy, not related to her oestrogen levels.

33320

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A 71-year-old man comes to the clinic with stiffness and limited range of movement of his right knee. He is overweight, with a BMI of 29, and has a history of osteoarthritis. On examination there is a transluminable swelling over the postero-medial aspect of the knee. Tenderness is most marked over the swelling, but extends to the upper part of the calf.

Which of the following investigations is most appropriate?

A	Knee ultrasound
B	Plain knee x-ray
C	D-dimer
D	Venogram
E	Compression ultrasound of lower leg veins

34967

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Calculator

Normal Values

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D	Venogram
E	Compression ultrasound of lower leg veins

Explanation

A	Knee ultrasound

The picture here is more typical of that seen with a Baker's cyst, rather than with a DVT. The swelling is the result of synovial fluid distending the gastrocnemio-semimembranosus bursa, rather than being a true cyst. Whilst drainage may be attempted, recurrence is common and spontaneous resolution may itself occur over the course of 1–2 years. It can also be injected with steroids. Medical management in the meantime includes ice, NSAIDs and non-weight-bearing exercise. If the diagnosis is in doubt, MRI can be considered to confirm the origin of the cyst.

B	Plain knee x-ray

A plain X-ray of his knee will probably show osteoarthritis, but the Baker's cyst will not be visible.

C	D-dimer

This does not sound like a DVT, given that there is a transluminable mass in the popliteal fossa.

D	Venogram

This does not sound like a DVT, given that there is a transluminable mass in the popliteal fossa.

E	Compression ultrasound of lower leg veins

Although an MRI will confirm the diagnosis of a Baker's cyst, it is expensive and does not allow management (e.g. aspiration or injection), whereas MRI can be done under ultrasound guidance.

34967

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A 61-year-old man who has a long history of rheumatoid arthritis, currently treated with methotrexate, presents to the Emergency Department with an acute arthritis affecting his right elbow. He tells you he was pruning roses a few days earlier in the garden and wonders whether something may have got into the joint. His rheumatoid disease has been stable for some time on methotrexate, and he takes lisinopril in addition for hypertension. His BP is 142/72 mmHg, pulse is 90/min and regular and he is pyrexial (38.6°C). The elbow is erythematous and hot, there is a significant effusion and he is holding the joint in flexion because of pain on minimal movement.

Investigations:

Hb	11.1 g/dl
WCC	15.4 x10^9/l
PLT	203 x10^9/l
Na^+	137 mmol/l
K+	4.3 mmol/l
Creatinine	115 micromol/l
CRP	205 mg/l
X-ray elbow	Changes consistent with rheumatoid arthritis

Which of the following is the most important next step?

A	Aspiration of joint
B	IV Flucloxacillin
C	Serum urate testing
D	Oral naproxen
E	IV Co-amoxiclav

36521

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Calculator

Normal Values

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Which of the following is the most important next step?

A	Aspiration of joint
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C	Serum urate testing
D	Oral naproxen
E	IV Co-amoxiclav

Explanation

A Aspiration of joint

This patient has septic arthritis until proven otherwise. As such, it is essential that the diagnosis and likely pathogen are confirmed by joint aspiration.

B IV Flucloxacillin

Blind antibiotic use in a patient taking immunosuppression is ill advised. The joint should be aspirated and then broad-spectrum antibiotics started, pending sensitivities.

C Serum urate testing

Serum urate may be elevated, but it would not divert you from joint aspiration to rule out septic arthritis.

D Oral naproxen

Of course this patient needs analgesia, but the most important part of management is to aspirate the joint for a diagnosis.

E IV Co-amoxiclav

After joint aspiration, broad-spectrum antibiotics (usually benzylpenicillin and flucloxacillin) are started to cover joint sepsis.

36521

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A 28-year-old woman with a history of rheumatoid arthritis comes to the clinic for review. She is currently taking Methotrexate and has quiescent disease, but wants to begin trying for a family. Examination reveals no evidence of active joint disease, and her ESR is 13 mm/1st hour. Liver function testing reveals transaminases within the normal range.

Which of the following is the most appropriate way to manage her RA?

A	Continue Methotrexate at the same dose
B	Half the dose of Methotrexate
C	Stop Methotrexate
D	Switch Methotrexate to Azathioprine
E	Switch Methotrexate to Infliximab

39034

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Normal Values

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C	Stop Methotrexate
D	Switch Methotrexate to Azathioprine
E	Switch Methotrexate to Infliximab

Explanation

The answer is - Switch Methotrexate to Azathioprine

Methotrexate is highly teratogenic and should not be used in pregnancy, hence it is important to make any switch before she starts trying for a family. Whilst Azathioprine is slightly less effective than Methotrexate for the treatment of RA, accumulating evidence suggests benefit risk is positive for use in pregnancy. Stopping Methotrexate without a replacement agent is not advised because of the risk of a flare of RA occuring. Evidence also suggests a relatively benign safety profile for Infliximab in pregnancy, although discontinuation in the third trimester is recommended.

http://www.cfp.ca/content/57/12/1401.full
http://www.ncbi.nlm.nih.gov/pubmed/21621603

39034

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External Links

Safety of azathioprine use during pregnancy
cfp.ca/content/57/12/1401.full

Safety of infliximab use during pregnancy
ncbi.nlm.nih.gov/pubmed/21621603

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A 32-year-old man with rheumatoid arthritis complicated by deforming arthritis comes to the Rheumatology Clinic for review. His arthritis is very poorly controlled and he has recently failed to gain significant benefit from methotrexate. You elect to institute therapy with tocilizumab. The patient asks you about potential adverse events.

Which of the following should you not counsel him about?

A	Depression
B	Abnormal liver function tests
C	Injection site reactions
D	Neutropaenia
E	Deranged lipid profile

39048

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Calculator

Normal Values

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A 32-year-old man with rheumatoid arthritis complicated by deforming arthritis comes to the Rheumatology Clinic for review. His arthritis is very poorly controlled and he has recently failed to gain significant benefit from methotrexate. You elect to institute therapy with tocilizumab. The patient asks you about potential adverse events.

Which of the following should you not counsel him about?

A	Depression
B	Abnormal liver function tests
C	Injection site reactions
D	Neutropaenia
E	Deranged lipid profile

Explanation

A	Depression

Depression is not an observed side effect of tocilizumab therapy.

B	Abnormal liver function tests

Hepatotoxicity may be an adverse event with tocilizumab (a monoclonal antibody directed against the interleukin-6 receptor, IL-6R).

C	Injection site reactions

Injection site reactions may be seen, although are not common. Tocilizumb may be adminstered intravenously or subcutaneously.

D	Neutropaenia

Neutropenia and neutropenic infections may be seen with tocilizumab therapy.

E	Deranged lipid profile

Deranged lipid profiles may be seen with tocilizumab, which is not a side effect of anti-TNF therapy.

39048

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Responses Correct:	0
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A 43-year-old woman is referred to the Rheumatology Clinic for review. She is noted by her GP to have Raynaud's phenomenon, calcinosis and thickening of the skin affecting her fingers, and telangiectasiae around her mouth and over her upper body. The GP suspects systemic sclerosis. You confirm the clinical features on examination, and her BP is 155/82 mmHg.

Investigations:

Hb	13.1 g/dl
WCC	7.2×10^9/l
PLT	199×10^9/l
Na^+	137 mmol/l
K^+	4.5 mmol/l
Creatinine	122 mol/l
ANA	+
Anti-RNA polymerase III antibody	+
Urine	Protein+

Which of the following is she at risk of developing?

A	CREST syndrome
B	Features of rheumatoid arthritis
C	Limited cutaneous disease only
D	Pulmonary fibrosis
E	Scleroderma renal crisis

40119

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Calculator

Normal Values

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D	Pulmonary fibrosis
E	Scleroderma renal crisis

Explanation

E	Scleroderma renal crisis

Different auto-antibody patterns are associated with differing patterns of disease associated with systemic sclerosis. Anti-nuclear antibody (ANA) tests positive in approximately 95% of patients with SSc, and therefore a negative test should prompt consideration of other fibrosing illnesses. Anti-RNA polymerase III antibodies are found in patients with diffuse disease, and are associated with rapidly progressive skin involvement as well as an increased risk for scleroderma renal crisis. These patients may also be at increased risk for cancer.

A	CREST syndrome

CREST syndrome is a term no longer used, as not all patients fulfil the entire mnemonic. Rather, the 'limited cutaneous' terminology is preferred.

B	Features of rheumatoid arthritis

Even if she had a rheumatoid factor (RF), this is non-specific and does not indicate propensity to develop features of rheumatoid arthritis.

C	Limited cutaneous disease only

Anti-centromere antibodies are usually associated with limited cutaneous systemic sclerosis, and these patients are more likely to have pulmonary hypertension and gastrointestinal involvement.

D	Pulmonary fibrosis

Anti-Scl-70 antibody is generally associated with diffuse cutaneous systemic sclerosis and a higher risk of severe interstitial lung disease.

40119

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A 44-year-old woman comes to the Rheumatology Clinic complaining of pain, pins and needles and altered sensation over the antero-lateral aspect of the left thigh. The symptoms are made worse by walking or standing, and made better by a period of sitting down. She has no other past medical history of note apart from mild asthma for which she takes a seretide inhaler. On examination her BP is 135/80 mmHg, pulse is 62/min and regular. There is minor numbness over the anterior aspect of the left thigh, and deep palpation just below the anterior superior iliac spine reproduces her symptoms. Her BMI is 26. Routine bloods are unremarkable, apart from a fasting plasma glucose of 7.2 mmol/l.

Which of the following is the most likely diagnosis?

A	Diabetic amyotrophy
B	Femoral mononeuropathy
C	Lumbar spine radiculopathy
D	Meralgia paraesthetica
E	Spinal stenosis

70486

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Calculator

Normal Values

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Explanation

D	Meralgia paraesthetica

The symptoms here fit well with a diagnosis of MP, which occurs due to entrapment of the lateral cutaneous nerve of thigh. It passes into the thigh through a tunnel formed by the lateral attachment of the inguinal ligament and the anterior superior iliac spine, and it is the crossover into the thigh where entrapment is most likely to occur. Risk factors include obesity and wearing tight, low-waisted trousers, which may compress the nerve.

A	Diabetic amyotrophy

The glucose of 7.2 mmol/l is consistent with early diabetes, particularly as she is not being treated with any blood glucose-lowering therapy. Diabetic amyotrophy is also associated with muscle wasting, which is not seen here.

B	Femoral mononeuropathy

The symptoms are confined to the sensory distribution associated with the lateral cutaneous nerve of the thigh.

C	Lumbar spine radiculopathy

This is associated with both motor and sensory symptoms and signs related to a particular nerve root, rather than a specific nerve distribution as seen here.

E	Spinal stenosis

Spinal stenosis is associated with claudication-type pain which is relieved by lying down or sitting forward.

70486

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